THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LXV. SATURDAY, SEPTEMBER 29, 1894. No. 13.

ORIGINAL ARTICLES.

FORTY CASES OF GUNSHOT WOUNDS.

BY PHILIP MILLS JONES, M.D.,
OF SAN FRANCISCO, CAL.;
LATE SURGEON-GENERAL, ARMY OF HONDURAS, C. A.; ASSISTANT TO THE CHAIR OF OTOLOGY, SAN FRANCISCO POLYCLINIC.

THE following cases of gunshot wounds (except Cases XV, XXXVII, XXXVIII, and XXXIX), were placed under my care twenty-four hours after a battle, during a recent revolution in Honduras, and while I was Surgeon-General of that country's army. From the time of the battle until my advent the cases had received no professional attention, and as retrograde changes are so largely facilitated by such fierce tropical heat as is there found, the deplorable condition of many of the wounded can hardly be imagined.

With the exceptions noted, the wounded were all in a building that had been assigned for hospital-purposes, and a brief description of which will not be out of place. It was an old "adobe" of two rooms, each twenty by twenty-five feet, and had been cleared out for the reception of the wounded men. Each room had three large double doors, no windows, a dirt floor, and whitewashed walls—that is, the walls had once been whitened, but it was many years before. The beds were made of raw-hide, stretched on a frame, and supported by posts at the four corners, and the bedding consisted of one blanket per man, except in the case of the Americans, and for them had been provided canvas beds and cotton sheets.

The medical and surgical armamentarium consisted of one operating-case, containing a fairly good assortment of instruments, chloroform, carbolic acid, mercuric chlorid, iodoform, morphin, and unbleached muslin. The muslin furnished lint, pads, "sponges," bandages, "drainage-tubes," and a rough sort of extension-apparatus. The dressings used were made by ravelling out the muslin, which was then dusted with iodoform, in some cases having been previously soaked in 5 per cent. carbolic-acid solution.

This report is submitted, not because of any originality in treatment that might possess intrinsic scientific value, but rather because the cases are many of them interesting in themselves, and because the unusual and unfavorable surroundings furnish added interest, as well as, perhaps, some indication of possible results under most discouraging circumstances. A raw-hide bed is better than the ground, and an adobe house is better than none at all—just as a shirt, a pair of trousers, and a blanket, though not quite so desirable as clean bedclothes and a clean nightshirt, are still better than nothing as covering for the patient.

The daily articles of diet were beef, beans, cheese, and a hard, dry corn-bread; but this food, with the exception of the beef, was all that they had been accustomed to. The beef was a luxury.

In most of the uncomplicated cases the path of the bullet was swabbed out with a 50 per cent. solution of carbolic acid, as it was found that this method of treatment induced a more rapid and satisfactory healing.

The cases are divided into wounds of the head (5), of the upper extremity (9), of the lower extremity (22), and of the trunk (4), and special attention is called to Cases I, III, VI, VIII, X, XXII, XXXV and XXXVI.

WOUNDS OF THE HEAD.

I. A. C. was an American, thirty-two years old. The bullet (probably from a Winchester thirty-eight caliber rifle) had entered half an inch to the right of the median line, and two and a half inches above the supra-orbital arch. The hair was shaved, and under chloroform-anesthesia a semicircular incision was made, including the upper margin of the wound, disclosing a ragged perforation of both tables. The bullet was found, in company with several spicula of bone, three-quarters of an inch below the surface of the cerebrum. These were removed after the wound had been enlarged slightly with forceps. All ragged edges were carefully trimmed away, and the wound was irrigated gently with warm water. About one-and-a-half fluidounces of cerebral matter escaped during the operation. The wound was carefully closed, and a silk-thread drain left in, which was removed on the third day. The patient rallied, and did well until the fourteenth day, when he was allowed to go out for a walk. He immediately got drunk, and lay in the hot sunshine all day. He was found and brought back in the evening, delirious, the temperature being 103°, and the pulse-rate 135. These conditions persisted until the seventeenth day. The wound was reopened, three drams of pus evacuated, and drainage reëstablished. The unfavorable symptoms were at once relieved, and the man went on to good recovery.

II. C. N., an Indian, was thirty-eight years old. A thirty-eight caliber Winchester, or revolver,

bullet, coming from above downward, had struck first about the nasal eminence, going from right to left, and had finally comminuted all the bones of the orbit, turning the eye upward upon the forehead. When first seen panophthalmitis and septic meningitis were well advanced, and nothing availed to save the life of the patient.

III. J. M. L. was an Indian, twenty-four years old. A small bullet entered at the articulation of the superior maxilla and the malar bone, on the right side, and passing backward and outward inside the zygoma and ramus of the jaw, and immediately below the external auditory meatus, made its exit through the mastoid portion of the temporal bone, which it finely comminuted. In cleaning the wound thirty-eight small pieces of bone, six pieces of lead, and sixty-four large maggots were removed. Frequent irrigation with a 1 : 3000 mercuric-chlorid solution kept the canal comparatively clean, and the case went on to good recovery in about four weeks, leaving, of course, resultant loss of vision and hearing, together with facial paralysis on the right side.

IV. J. B., an Indian, was thirty years of age, whose wounds were rather eccentric, and were made by a small bullet. The man must have had his mouth open when shot, for the ball had passed horizontally through both cheeks without injury to the teeth. The two small holes healed rapidly.

V. J. M. M. was an Irish-American, thirty-five years old. A bullet, probably from a Winchester rifle, passing from before backward horizontally, and a little above the temporal ridge, had gouged out about one-and-a-half inches of bone, splintering both tables, but affecting the inner more than the outer table. The wound was in a very bad condition, and during the removal of the bone-splinters, gravel, dirt, etc., a large amount of brain-substance was lost—probably two or three ounces or more. The patient never fully rallied, and died on the third day.

Of the five cases, one was very simple, and is mentioned merely as a curiosity. Of the remaining four, all serious, two recovered, giving 50 per cent. mortality.

WOUNDS OF THE UPPER EXTREMITY.

VI. E. H., an Indian, was twenty-one years old. In this case, as in many of the others, the position of the man at the time of receiving the injury is indicated quite conclusively by the nature of the wound or wounds. This soldier must have been standing with his left arm extended along the barrel of his gun, presumably aiming the weapon in the direction from which the bullets were coming, for a ball, probably from a Winchester rifle, had torn away both phalanges of the left thumb, and entered the arm just above the insertion of the deltoid, and about three-and-a-half inches below the shoulder-joint. There was no point of exit. Extending the arm and placing it in the position suggested as probable, a probe was introduced, and with ease passed directly into the thorax, the bullet having entered between the first and second ribs, passing in front of the shoulder-joint. Amputation of the thumb was completed, and expectant treatment decided upon for the more serious injury. On the third day pyo-pneumothorax was quite evident, and expectoration of almost pure pus commenced, the temperature ranging from 99° to 102°. This condition was maintained for about two weeks, when improvement began and continued until the fourth week, when the man was discharged.

VII. A. N., an Indian, was twenty-two years old. In this case the position occupied at the time of the injury was, probably, about the same as that of E. H., Case VI, with the arm extended, but the bullet had a much lower velocity, and did little damage. The point of entrance was three-and-three-quarter inches below the shoulder-joint; the bullet had passed in front of the joint, and was found in the pectoralis muscle, over the third rib. Rapid, uncomplicated recovery followed removal.

VIII. C. M. was thirty years old. The amount of injury in this case indicated a large bullet and a fairly high velocity—conditions furnished by the Remington (modello Argentino) rifles, many of which arms were in use. The position occupied was probably very similar to that in Cases VI and VII.

The ball entered the forearm posteriorly four inches above the wrist-joint, passing out anteriorly about three inches below the elbow, splintering and denuding both bones; it then entered the arm five inches below the shoulder-joint on its outer anterior aspect, passed over and behind the shoulder, and was removed from the trapezius, just over the spine of the scapula. The forearm was resected, but the result was most unsatisfactory, and on the thirteenth day the arm was amputated in the middle third. Satisfactory recovery followed.

IX. H. C., an Indian, was twenty-six years old. The wound in this case seemed to indicate a position similar to that occupied by Cases VI, VII, and VIII, for the bullet, a small one, probably from a Winchester rifle, entered the left arm about six inches below the shoulder-joint, passed in front of it, and was found embedded in the pectoralis muscle three inches to left of the median line and over the sixth rib. A rapid and satisfactory recovery followed extraction of the bullet.

X. Y. C., an Indian, twenty-two years old, presented an exceedingly interesting condition. In the right forearm, posteriorly and three inches above the wrist-joint, was the point of entrance of a bullet, apparently of thirty-eight or forty-four caliber. There was no wound of exit, and the arm exhibited a condition somewhat alarming. The forearm and lower third of the arm were greatly swollen, blackened, and covered with clusters of blebs about the size of a grape, and filled with purple-black, slightly viscid, ill-smelling fluid. There was a sharp line of demarcation about midway between the elbow-joint and the shoulder-joint, and the following measurements were taken:

Circumference of forearm, largest	16 inches
" " arm, below line of demarcation .	18 "
" " " above " " .	9 "

The temperature was 101°, the pulse 98, and the arm was the seat of most intense pain. A diagnosis

of gangrene seemed unquestionable, and immediate amputation was urged by the junior surgeon, but I determined to try a less radical treatment. Longitudinal and transverse incisions, from one-eighth to one-quarter inch deep, and one-half inch apart, were made from the line of demarcation to the wrist, resulting in very free bleeding and almost instant relief from the excessive tension and pain. About two and a half or three pints of blood and bloody serum escaped. The arm was covered with a loose, wet dressing, and the incisions repeated daily for three days. By the fourth day the swelling had almost disappeared, the size of the arm was nearly normal, and the elbow-joint was movable, though movement caused considerable pain. On the sixth day the position of the bullet was made out about three inches above the elbow posteriorly, but the missile was not removed until two months later. The man left the hospital on the twelfth day, at which time the entrance-wound was rapidly healing. He was seen seven months afterward, and reported perfectly well.

XI. L. S., an Indian, twenty-four years old, had been wounded in the right wrist, a large bullet having entered on the dorsal side, passing through, and entirely destroying the wrist-joint. The forearm was at once amputated in the lower third, but the man died. Death was probably the result of a very severe wound of the left thigh.

XII. M. G. was an Indian, thirty-three years old. A small bullet had passed through the soft parts of the left arm, doing no damage. Death was caused by another wound.

XIII. Gen. W., a Mexican, forty-nine years old, suffered from an uncomplicated flesh-wound of the right arm, the ball having passed three inches below the shoulder-joint and to the outer side of the humerus. Rapid recovery ensued.

XIV. M. L. was an Indian, thirty-six years old. A small bullet passed through the soft parts of the left arm, three inches above the elbow-joint and to the outer side of the humerus. Uncomplicated recovery followed.

Of these nine cases of wounds of the upper extremity two were fatal, death probably being caused by other and more severe wounds. In one case resection was tried, but was eventually followed by amputation. In the remaining cases expectant treatment was eminently satisfactory.

WOUNDS OF THE LOWER EXTREMITY.

XV. S. L., an Indian, thirty-seven years old, came under my care forty-eight hours after he had shot himself, with a 38-caliber revolver, in the right foot. The ball entered midway between the extremity of the outer malleolus and the posterior extremity of the os calcis, passed forward and inward, and was found below and between the third and fourth metatarsal bones, from which location it was removed through an incision on the outer side of the foot. Removal and free drainage and irrigation resulted in rapid subsidence of inflammation and speedy recovery.

XVI. J. S. S., an Indian, about thirty years old, was accidentally shot with a Remington rifle. He was sitting on the ground, and the bullet coming from above downward, entered the left thigh seven inches below the anterior superior spine of the ilium, and passed out one-half inch to the left of the anus. He died four hours after being shot. The shaft of the femur and the greater portion of the left innominate bone were finely comminuted.

XVII. S. L. was an Indian, thirty-five years old. A large bullet, probably from a Remington rifle, entered four inches above the left knee-joint posteriorly, passed downward and forward, splintering the femur, tibia, and fibula. Gangrene was well advanced, and high amputation was not successful in saving the man's life.

XVIII. I. L., an Indian, forty-two years old, was also wounded with a large bullet, which had in this case entered two-and-a-half inches below the knee-joint anteriorly, and passed out three inches above the joint posteriorly. Gangrene was already advanced, and amputation in the upper third of the thigh was followed by death in forty-eight hours.

XIX. P. A., a Mexican, twenty-four years old, seemed to be a more promising case. A small bullet—38 caliber—had passed almost horizontally through the right knee-joint, splintering slightly both femora and tibiæ, but when examined there were no symptoms of gangrene. With all the antiseptic precautions possible, the leg was amputated in the middle third of the thigh. Unfortunately, gangrene made its advent on the second day after the operation, and the patient died forty-eight hours later.

XX. J. C. was an Indian, twenty-four years old. A small bullet passed through the right leg, from before backward, two inches below the knee-joint. The tibia was splintered up into the joint. The wound was in bad condition, but probably gangrene had not commenced, and amputation in the lower third of the thigh was followed by a very satisfactory recovery.

XXI. J. M. was an Indian, twenty-six years old, whose wound was the product of a small-caliber bullet which had passed through the left thigh, entering anteriorly three inches above the knee-joint and passing out about one-and-a-half inches lower, posteriorly. The femur was splintered down into the joint. Amputation in the middle third of the thigh was highly successful, and the patient made a good recovery.

XXII. C. J., an Indian, twenty years old, presented an unusually interesting condition. A small bullet had entered the left thigh, three-and-a-half inches above the knee-joint, on its posterior and anterior aspect, taking a course downward, forward, and inward; *i. e.*, toward the knee-joint. Despite a most careful and persistent examination and probing, no bullet could be found. There was very little pain and soreness in and about the joint, which was freely movable; there was no abnormal temperature and practically no inflammation; it was therefore decided to await further developments. The entrance-wound healed rapidly and with very little slough, and the general condition

persisted for three weeks. Only on forced motion of the joint was there any pain, and this steadily decreased. On the twelfth day a small tumor was made out, lying below, behind, and to the inner side of the patella, perfectly movable and about three-quarters of an inch in diameter. On the twenty-third day this was cut down upon and found to be a small piece of bone, apparently chipped from the inner condyle of the femur. The bone was removed, and the wound closed by first intention. The patient was discharged ten days later, with slight stiffness of the knee-joint.

XXIII. C. D. was an Indian, sixteen years old. A small bullet—possibly from a Winchester rifle, 38 caliber—passed through the left thigh from behind forward, entering about seven inches above the knee and lodging in the superficial tissues, anteriorly, two-and-a-half inches below the anterior superior spine. The femur was fractured, and a small piece had been chipped off. This was with some difficulty removed, the leg dressed, and a crude extension-apparatus applied. It was very difficult to keep the leg in good position, but the resultant deformity was not marked—much less than had been anticipated.

XXIV. L. S. was a Mexican, twenty-four years old. A large ball had passed through the left thigh from before backward, seven inches below the great trochanter. There had been great shock and very much hemorrhage, and the patient did not survive an amputation.

XXV. M. G. was a Spaniard, thirty-three years old. The bullet in this case entered the left thigh anteriorly, about six inches above the knee-joint, the point of exit being posterior, two inches above the point of entrance. The femur was fractured, and two large and two small fragments could be found; the distal extremity was split, but not quite into the joint, and amputation was decided against. Three of the bone-fragments were removed; the fourth, being more firmly adherent, was not disturbed; and the leg was fixed as well as it was possible. Sloughing was rather free, but by the end of the third week had begun to decrease, when, unfortunately, the patient died of secondary hemorrhage during my absence.

XXVI. C. G. was an Indian, nineteen years old. A large bullet passing from below upward and inward, commencing at a point about three inches above the inner malleolus of the left leg, had broken and split both bones of the leg, and so lacerated all the soft parts that no relations could be found. Gangrene had commenced and was not checked by amputation in the lower third of the thigh. Death occurred on the third day.

XXVII. A. G. was an Indian, about twenty years old. A bullet, probably of small caliber, entered the right thigh two inches above the knee-joint, on the inner side, and passed through, fracturing the femur and splitting it down into the joint. The point of exit was two inches higher than the point of entrance. Gangrene had already commenced, but amputation in the middle third of the thigh was eminently satisfactory in saving the man's life and leaving a good stump.

XXVIII. A. H. was a Mexican, thirty years old. A large bullet, commencing at a point about four inches above the inner malleolus, somewhat posteriorly, and going upward, tore off the calf of the left leg for about six inches. The wound when first seen was in very bad condition, and considerable sloughing followed. There was less loss of tissue than might have been anticipated, and comparatively little contraction and lameness.

XXIX. A. L., an Indian, twenty-six years old, was very slightly wounded. A small bullet passed through the soft parts of the right thigh, externally to the femur, doing but little damage, and uncomplicated recovery followed.

XXX. R. G. was a Mexican, twenty-four years old. A small bullet had removed the soft parts on the anterior surface of the left thigh, three inches above the knee, to a depth of about three-fourths of an inch; the wound being about four inches long and three inches wide. It was filled rapidly by granulation.

XXXI. G. M. was an Indian, forty-nine years old. A small bullet passed through the soft parts of the left thigh, six inches above the knee, externally to the femur. Uncomplicated recovery followed.

XXXII. R. G. was twenty-four years old. A small bullet, coming from the left, blistered the skin of the penis and passed through the right thigh, entering at a point on its inner anterior aspect, three inches below the symphysis pubis, and passing out in the same horizontal plane, leaving a canal about three-and-a-half inches long. The finger thrust into the canal was found to be in contact with the femoral artery above, which the bullet had just missed. Fortunately, there was but little sloughing, and the wound healed by granulation, very slowly.

XXXIII. J. S. was a Mexican, thirty-eight years old. The bullet had passed from behind forward, through the soft parts of the left thigh, about seven inches above the knee, and externally to the femur. No complications arose to retard a good recovery.

XXXIV. J. M. was an Indian, forty-two years old. A small bullet passed through the soft parts of the right thigh, five inches above the knee-joint, and internally to the femur. Uncomplicated recovery ensued.

XXXV. A. A., an American, thirty-seven years old, presented a number of wounds, and said that they were all made at the same time and by the same bullet, while he was lying on his back on the ground. The ball passed through his left foot, between the third and fourth metatarsal bones, entered the thigh about four inches above the knee, passed upward through the thigh, superficially, for about six inches; it next entered the abdominal wall about two inches above the center of Poupart's ligament, passed upward and inward, and was found at, and removed from, a point about two-and-a-half inches below and to the left of the umbilicus. The man made a very good and rapid recovery.

XXXVI. J. C. was an Indian, thirty-four years old. This case is presented with apologies for the unscientific nature of the treatment. The wound was

a simple one to the soft parts of the right thigh, and attracted no especial attention until the third day, when the right leg became very stiff and sore, which condition progressed rapidly until the diagnosis of tetanus was clear. The Indian companions of the patient brought some twigs and pieces of root of a plant which was by them considered an antidote and cure for snake-bite and lockjaw, and asked that the remedy be tried in this case. A strong infusion was made, and twenty minims injected hypodermatically every three hours. By the time the second injection was made the convulsions were very violent and there was extreme opisthotonos. After the second injection, however, these symptoms did not increase in severity, and by the time of the eighth injection they had commenced to subside. Invariably the injection seemed to relieve the spasms. This treatment was continued for three days, by which time the patient seemed to be rapidly recovering. After the fourth day the case went to a good recovery. There was resultant abscess in both arms from the injections. I did not positively recognize the plant, but it very much resembled the cinchoneæ, and was probably one of that large family.

In these twenty-two cases of wounds of the lower extremity are included three in which gangrene had set in when first seen, and two of which died. In a total of seven deaths four were from injuries to the knee-joint, of which there were seven cases. There were six amputations of the thigh, with three recoveries, and four cases of gangrene with one recovery.

WOUNDS OF THE TRUNK.

XXXVII. J. D., an Indian, twenty-two years old, was seen two hours after being shot with a thirty-eight caliber revolver at short range. Hypodermatic injections of whiskey were given to relieve shock, which was very great. On examination it was found that the bullet had entered one-and-one-half inches to the left of the median line and three inches below the left nipple. Careful introduction of a probe was followed by the escape of a small amount of bloody serum, and the impulse of the heart, beating against the probe, could be distinctly felt. The bullet was found lying superficially on the line of the twelfth dorsal vertebra, and two inches to the left of the median line. It was removed on the third day, leaving a wound that healed rapidly. A drainage-tube was inserted into the entrance-wound to the depth of three-and-one-half inches, and gradually withdrawn as the wound closed from below. Pus was discharged for three weeks. There were no symptoms of pneumothorax, and temperature, pulse, and respiration were normal until the seventh day, when, contrary to instructions, the patient sat up in bed and ate some solid food. Six hours later the temperature was 105°, the pulse 150, and a large amount of pus was discharged from the drainage-tube. These unpleasant symptoms were relieved by calomel and aconite, and the case went on to a good recovery. The bullet probably passed just beneath the apex of the heart, was deflected downward by the bodies of the vertebræ, and so made its exit. Seven months later the man was seen, and was perfectly well.

XXXVIII. M. L., an Indian boy, fourteen years old, was accidentally shot with a thirty-eight caliber revolver at short range, and was seen three hours later. The bullet passed through the left arm in front of the humerus, entered the thorax by passing through the sixth rib, went behind the heart, and entered the right lung. There was double pneumothorax, and the pulse ranged from 114 to 210, the respirations from 34 to 64, and the temperature from 100° to 103°. Death occurred on the fifth day.

XXXIX. S. C. was an Indian boy, twelve years old. The boy was seen two hours after having been shot accidentally with a thirty-two caliber revolver, the bullet striking first a stone wall, from which it glanced and wounded the boy in his right shoulder, passing from behind forward, immediately beneath the clavicle, and, strange to say, doing no damage to any of the important structures in that locality.

XL. J. M. was an Indian, twenty-three years old. A small bullet, nearly spent, entered at a point two inches to the left of the median line over the sixth rib, and was deflected, passing around the thorax, and lodging about three inches to the left of the vertebral column. Rapid recovery followed removal of the bullet.

PAINFUL GASTRIC NEUROSES: THEIR NATURE, SYMPTOMATOLOGY AND ETIOLOGY.

BY ALLEN A. JONES, M.D.,
CLINICAL INSTRUCTOR IN MEDICINE AND INSTRUCTOR IN PRACTICE, MEDICAL DEPARTMENT, UNIVERSITY OF BUFFALO.

PAIN in the stomach is always evidence of some disturbance of the sensory innervation of that organ, and the success that attends the endeavor to cure a painful gastric condition will be commensurate with the completeness of the removal of its cause. In perfect health, no sensation whatever is experienced in the stomach from the presence of a reasonable quantity of food therein, nor from the act of digestion. Frequently, however, an overloaded stomach gives discomfort, if not real pain. If the nerves of the stomach are not disturbed by direct or remote irritation, or by disorder of their nutrition from chronic disease or certain forms of toxemia, digestion takes place without sensation. Doubtless many instances of pain in the stomach are of the nature of neuralgias, as the pain is complained of when the stomach is empty as well as when it contains food; and the chemistry of gastric digestion is not infrequently normal while pain is present.

In considering the painful neuroses of the stomach the organic diseases of the organ, such as carcinoma and ulcer, are necessarily left untouched. A good deal of difficulty arises sometimes in distinguishing between the sensory disturbances that are functional and those that are organic in origin, and the most exhaustive means of diagnosis at our command may

have to be brought to bear upon a case in order to reach a satisfactory decision. This is especially true of ulcer and carcinoma, when gastralgia occurs in patients who bear many of the stigmata of one or the other of these diseases. Gastralgia independent of ulcer, and ulcer accompanied by intense pain, are each common in young women, while gastralgia without carcinoma, and carcinoma with pain, are each of frequent occurrence in old people. Particular reference to the pain in hyperchlorhydria is omitted in this connection, as this secretory neurosis is so closely allied to ulcer of the stomach; it is, furthermore, best considered under the head of secretory disturbances.

It is not uncommon, however, to find definite disorder either of secretion or of motion in cases of gastralgia, but it is not always easy to trace a causative connection between these and gastralgia. For instance, a woman under my care who had attacks of severe gastralgia, also presented the condition of gastric anacidity, in which the stomach-contents were certainly non-irritating, as they were persistently subnormal in acidity. Occasionally the motion became hurried, and the stomach was found completely empty two hours after the ordinary mixed meal.

The most severe form of gastric pain is that which we designate essential gastralgia. It is of a paroxysmal nature, occurs most frequently in hysterical women, comes on for the most part independently of the time of eating or of the character of the food, and is accompanied by great nervous perturbation. The duration of the paroxysms of gastralgia varies in different cases and in separate attacks in the same case. Several patients under my care suffered twelve hours in some attacks when not relieved by treatment. There is a noticeable tendency on the part of patients to exaggerate the pain. One of my patients always became extremely excited in describing her attacks, and repeatedly declared she could not live through another paroxysm. This exaggeration is often more marked during the pain, and this patient cried and screamed alternately, while otherwise behaving in an unreasonable manner.

The location of the pain in essential gastralgia is often in the region of the pylorus, which fact sometimes confuses the exclusion of biliary colic in differential diagnosis.

Of the less severe forms of gastric pain, the time of onset, the character, and the location, are of chief importance. Some complain of pain after eating, others of pain an hour before meals, while a proportion of cases have pain at irregular periods. A few cases complain of constant pain in the stomach. One lady, about thirty-five years old, who has been a pronounced neurasthenic for many years, says she never knows what it is to be free from gastric pain. As she is constantly thinking of and crying about herself, one is inclined to think she exaggerates her stomach-trouble, as she does everything connected with herself and her suffering. The gastric chemistry in this case is irregular. At one examination I found it normal, while at the next there was lactic-acid fermentation and subnormal hydrochloric acid. Her stomach was not slow in emptying itself, although constipation was quite persistent. Another case is in the person of a young girl, aged twenty, who has complained of various neuralgias for a year and a half. Upon two direct examinations of her stomach, motion and secretion were found normal, and absorption was good. At the present writing, this girl declares she has constant pain in her stomach, but this is scarcely credible, as she is so prone to suggestion that she will say she has pain in any imaginable part of her body. Nevertheless, she suffers as such neurasthenic creatures do, and her case is a good example of the influence of the psychic state upon gastric sensation. This girl's vitality is low, her nutrition is imperfect, her skin is "muddy," she is constipated, her arteries are tense, the capillary circulation poor, and she is decidedly hyperopic. It is not surprising that these conditions are accompanied by headache and stomach-ache.

Cardialgia is the predominant form of pain in some cases. It may or may not be accompanied by regurgitation or by belching of gas. It is usually associated with a high total acidity of the gastric contents, or it results from hyperesthesia of the sensory filaments about the cardiac opening which renders them painful under the stimulation of normal acidity and intra-gastric pressure. Sometimes spasm of the cardia is accompanied by severe pain. In a woman treated two years ago for gastroptosis with some dilatation and a pronounced gastric catarrh, upon several occasions the cardia contracted tightly around the stomach-tube, and it was necessary to wait until the spasm had subsided before withdrawing the tube. The patient showed evidence of suffering when the contraction took place and put her hand over the lower end of the sternum. She said the pain there was intense for a few moments. This incident suggests that spasm of the cardia may sometimes cause cardialgia. Not only is severe gastralgia sometimes felt in the region of the pylorus, but less severe pain occurs at this point. The same considerations apply here as apply to pain at the cardia, with the exception that in differential diagnosis carcinoma and ulcer are more frequent at the pylorus, and whereas in cardialgia pressure over the region of pain often gives relief, in pain near the pylorus tenderness upon pressure is usually quite noticeable even in the absence of

organic disease The anatomic proximity of the pylorus to the cardia is worth remembering when we consider the comparative remoteness of the areas to which patients refer pain.

As regards the character of gastric pain, it is variously described as shooting, boring, gnawing, burning, or tearing. A dragging, dull, heavy ache is also described by some. Thus it will be seen that abnormal sensations in the stomach assume a variety that accounts for the difficulty many patients experience in describing their peculiar form of discomfort.

Etiology. Neurasthenia exists in many instances without any complaint whatever of the stomach. In another class of neurasthenics intermittent stomach-trouble is present; while in a third class "the *ego* in the cosmos" of the neurasthenic centers in the stomach, and that forms the chief complaint. This is the "neurasthenia gastrica" of some writers. This last class of patients may be divided into those who have pain but normal digestion, and those who have pain with some defect in gastric chemistry or motility. In the first the condition is a simple sensory neurosis; in the latter it is a mixed neurosis with pain. The relation between neurasthenia and gastralgia is one that often involves the question of the etiologic factors underlying the former condition; nevertheless, pain in the stomach is very commonly associated with the symptom-complex that we call neurasthenia, and the relief of the gastric symptoms is often commensurate with the improvement in the general and nervous conditions. For instance, a married woman, aged twenty-five, the mother of two healthy children, presented herself in May, 1893, complaining of pain and distress after eating, although her appetite was enormous. She also had headache, backache, and pain referred to the ovarian region. For years she had been wretched generally, but not sick in bed. Her physician, a homeopath, had faithfully tamponed, supported, and otherwise treated her uterus during all that time, and had thoroughly impressed upon the patient that her trouble all originated in her pelvic organs. At the time of my examination she was thin, pale, weak, nervous, and constipated. Her heart and lungs were normal; the stomach was low but not dilated; the kidneys were in place; the colon was loaded with fecal matter. The uterus was freely movable and in its proper position. There was some leukorrhea. The woman said she never was able to read half an hour without getting a severe headache. Upon refraction she was found simply hyperopic and was fitted with + cyl. 0.75 D, ax. 90°, for each eye. Her urine was mildly acid, clear yellow, with a specific gravity of 1015. No sugar or albumin was present. There was a trace of indican. Volume in 24 hours 1280 c.c., urea 14.080. Her blood registered 35 with plate and 43 with spectroscope. Her stomach showed normal HCl, with an absence of organic acids after a test-meal of lean meat, bread, and water. Gastric motion was somewhat slow; but on the whole digestion was accomplished well, and upon several direct examinations there was found no apparent cause for the gastric pain. This patient was directed to wear her glasses constantly, to flush the colon, to take a cold spinal douche every morning, to adhere to a carefully selected mixed nutritious diet, and she was given large doses of strychnin before meals, with aloin as a laxative. Emulsion asafœtidæ was given in one-ounce doses four times a day. Improvement commenced and steadily progressed until she reported herself in about two months entirely free from gastric pain, and said she never felt better in her life. I have since learned from the patient that she remains well.

It is difficult to draw a sharp line of distinction between neurasthenia and hysteria so far as they bear an etiologic relation to gastralgia. Those cases manifesting intense gastralgia, while apparently in good health, sometimes behave in an excited and unreasonable manner, as is illustrated in the case of a healthy woman who, when attacked by gastralgia, not infrequently spoke unkindly to and slapped her sisters and daughters, while they were endeavoring to give her relief, and afterward said she was sorry for her behavior, but that she did not know what she did or said when in pain. Another woman became so terrified when she felt the first twinge of pain that she occasionally hurried to the office excited and trembling in fear that the pain would become severe.

Locomotor ataxia is the cause of gastric pain in some cases. The pain, to be at all characteristic, comes in the nature of a crisis, and is very severe, but the lesser forms of pain may be present in this disease. The other evidences of the disease may be latent and the diagnosis be thus confused. Other cord-diseases and affections of the spinal column occasionally cause gastralgia.

Chlorosis is sometimes accompanied by gastric pain, and the point of chief importance in such instances is the differentiation between ulcer and simple gastralgia. My associate, Dr. Stockton, was consulted some years ago by a young girl with chlorosis, and during the course of his conversation with the patient he told her to go home and to bed at once, or else she would have another attack of vomiting and would vomit blood. She disregarded the advice, and about twelve hours later a message came that she had vomited a large amount of blood. This girl's chief complaint was of pain after eating with occasional vomiting of very sour contents, and she was the color of white wax.

In chlorosis the conditions are ripe for the onset of various neuralgias, and in many cases the pain in

the stomach is not associated with ulcer or with the hyperchlorhydria that accompanies ulcer. Indeed, chlorosis exists not infrequently with subnormal HCl. Grave anemias following acute diseases, like typhoid fever, are sometimes accompanied by severe pain in the stomach, with low HCl, retarded motion, and some fermentation.

The general malnutrition caused by lithemia, gout, rheumatism, malaria, tuberculosis, syphilis, and renal insufficiency is often associated with painful gastric disturbances of mostly a neurotic character. With my associate, Dr. Stockton, I have observed a number of cases of gastralgia in men that yielded to potassium iodid after resisting other forms of treatment. Dr. Lyman,[1] in a paper entitled "Gastro-enteric Rheumatism," which he read before the Association of American Physicians, June 1, 1894, says the pain so commonly associated with excess of hydrochloric acid and ascribed by many observers to the irritating action of the acid upon the walls of the stomach, is in truth a definite rheumatic gastralgia depending upon irritation of the gastric plexus of nerves by toxins resulting from hepatic and renal insufficiency. Dr. Lyman calls particular attention to the arthritic cases having attacks of gastric pain. My very modest experience in this matter does not lead me to call these cases "gastric rheumatism." Sometimes stomach-trouble with pain may be traced to the excessive use of alcohol, tobacco, coffee, cocain, opium, or to the habit of masturbation.

Finally, we come to consider the most fruitful of all sources of painful gastric neuroses, consisting in the effect of mental fatigue, worry, excitement, and the various sources of reflex irritation upon gastric innervation. Overworked business men who are under a hard strain fail first in appetite and digestion. They begin by feeling weight and distress in the epigastrium after meals, and end by living on milk or broth because they fear solid food will bring the pain they know too well. Financial anxieties or reverses, which keep a man in a state of high nervous tension for a long time, are a fruitful source, not only of gastric disturbance but of many a general breakdown which may never be recovered from even after years of travel and treatment. Then the men who work from eight until six in a close office, and spend every night until two o'clock smoking, drinking, or what not, are finally made aware that a stomach needs rest, oxygen, and good innervation in order to functionate well and painlessly. Women are subject to innumerable disturbing influences in every-day existence: Late hours, late suppers, loss of sleep, continual social dissipation, crosses in love, constant emotional excitement for some, and for others loss of husbands or children, husbands gone wrong, neglectful or abusive, household cares, financial hardships, and other things that harass the nervous system; for shop-girls, long hours, insufficient and improper food, lack of sunshine and fresh air, coupled with discontent—these and many other influences work havoc with the innervation of the stomach and bring about the "American dyspepsia," so called.

Of the reflex disturbances of the stomach arising from derangement of other organs, those that play the most prominent part are eye-strain, uterine or ovarian disorder, and floating kidney. Of rarer occurrence are reflexes from urethral disease, varicocele, or disease of the rectum.

The state of secretion and motion in painful nervous disorders of the stomach varies widely in different cases. In some cases motion, absorption, and gastric chemistry are normal, while in others motion alone may be at fault, or secretion may be abnormal. It is unnecessary to enter here into a close discussion of the possible disorders of motion and secretion that may be coupled with a painful state of the stomach; suffice it to say that the chief object of direct examination of the stomach is to exclude organic disease, and subsequently the tube may be used as a means of treatment.

(To be concluded.)

[1] American Journal of the Medical Sciences, June, 1894.

A REPORT OF THE ULTIMATE RESULTS OBTAINED IN EXPERIMENTAL EYE-TUBERCULOSIS BY TUBERCULIN-TREATMENT AND ANTI-TUBERCULOUS INOCULATION.[1]

BY E. L. TRUDEAU, M.D.,
OF SARANAC LAKE, N. Y.

AT the last two meetings of the Association I presented rabbits, illustrating the beneficial effects that may result from treatment with tuberculin in experimental eye-tuberculosis and the marked inhibitory action exercised over this type of disease by preventive inoculations. In a morbid process, however, following so irregular a course, and of so relapsing a nature as tuberculosis, time must ever be the crucial test that should be applied to any apparently favorable results obtained, and I therefore report briefly the further results of these experiments.

The curative effects of tuberculin on the eye-lesions, which, as I showed, may go on apparently to absolute disappearance of the tuberculous process in the eye, is in but very rare instances permanent, and a strong tendency to relapse sooner or later becomes apparent. Even after the eyes have remained free from any morbid manifestation for as

[1] Read before the Association of American Physicians, Washington, May, 1894.

long as twelve months, will this tendency to recurrence manifest itself. Little by little, signs of vascular irritation appear in the eye and around the remaining trifling and apparently extinct foci, and these slowly show evidence of renewed activity. The course of the relapse in the great majority of cases, however, seems essentially chronic, and the destructive and inflammatory processes resulting in caseation are less marked than those that occur after the primary inoculation.

The tendency to recurrence after treatment with tuberculin exists, therefore, though to a much less degree, experimentally as clinically, and the extent to which the tuberculous process can be influenced favorably seems to depend upon the degree and character of the irritation induced about the tubercle and the length of time during which this irritation can be maintained as a result of the treatment rather than upon any direct germicidal effect or upon the production of a lasting immunity.

In lupus we note that the manifest and marked good effects of the treatment last only so long as the injections of tuberculin cause, in a varying degree, vascular changes and cellular infiltration about the tuberculous areas, and cease as soon as the remedy is powerless to produce these. In the rabbit's eye this slight irritation can be maintained much longer than in lupus in man, and the result is correspondingly better and more permanent. How powerful a factor in antagonizing the progress of tuberculosis an artificially induced irritation of the surrounding tissues can be is shown by the complete cures that often follow resection of tuberculous joints, even though much of the infectious mass may unavoidably have been left in the joint. It has also been demonstrated clinically, and of late experimentally as well, that in tuberculous peritonitis the traumatism of a celiotomy and the exposure of the serous membrane to the air are capable of producing a reactive irritation which enables the tissues to smother the onward progress of the more chronic bacillary infection, and apparently cures the disease.

In weighing the evidence offered by this study of the effect of tuberculin on the initial tuberculous lesion as it occurs in the rabbit's eye, it should be noted that the eyes of the control-animals are all destroyed, often many months, before relapses begin to occur in the treated ones, and that the relapsing lesions run a very chronic course. This treatment may be said, therefore, to produce a marked and undoubted curative influence upon the disease, but an influence which, though inhibitive in its action for long periods of time, but rarely leads to a permanent cure in the initial lesion. I have not had an opportunity to study the effect upon these relapsed eyes of a renewal of the treatment.

The results of preventive inoculation are much more satisfactory and apparently more enduring. The rabbits which have survived the subcutaneous inoculation of living cultures of the avian tubercle-bacillus of gradually increasing virulence and in graded doses have undoubtedly acquired a certain degree of immunity to subsequent eye-inoculation with the mammalian cultures, which in some animals under my observation has persisted for over a year without the slightest evidence of a relapse. These eyes appear almost normal, little or no evidence of the virulent inoculation remaining, save the corneal scar and slight adhesions of the pupil to the lens. Unfortunately here, as in the case of animals treated with tuberculin, apparent relapses occur, though a study of the changes in the eye does not point so much to a true relapse as to imperfect and only relative protection, the disease from the first merely running a very chronic course. These cases are, however, by no means the rule, and the degree of immunity obtained appears in many instances of long duration. To test the permanence of the apparent immunity, reinoculation was, after six months, practised in the sound eyes of several of the animals. The changes in the eye produced by this followed to some extent the same typical course as in the first instance, and the disease ran a very chronic course, and in one instance aborted entirely, the second eye being restored, as the first had been. This striking result is shown in the photographs of animal A, in which the eyes, both six months and a year after the virulent inoculations, remain apparently normal. This was, however, the only animal in which so good a result was obtained. Other photographs were made from the same rabbits shown here last year, and were taken one year after the test-inoculation. They illustrate admirably the degree and uncertainty of the protection realized, which may be either complete, partial, or entirely lacking.

As I pointed out, the reaction produced in the surrounding tissues by the introduction of the mammalian bacillus into the eye differs greatly in the prepared animals from that observed in the controls. In the controls the slight degree of irritation caused by the traumatism having passed away, but little is to be noted in the eye for ten days or two weeks, when the evidence of a gradually progressive tuberculous process appears and goes on uninterruptedly to more or less complete destruction of all the structures of the eye. In the prepared animals, on the other hand, the introduction of the infectious material into the eye gives rise almost at once to signs of violent and at first steadily increasing inflammatory reaction, which, however, in two or three weeks slowly begins to subside and may finally entirely disappear. The more marked and more immediate this inflammatory reaction, the better the prospect

that the tuberculous process will be ultimately aborted, and that almost complete restoration of the eye will ensue in the animal under observation. Indeed, a very fair estimate of the degree of protection conferred may be made, according to the early appearance and intensity of this primary reaction. Even in cases in which it is slight, the tuberculosis runs a more chronic course than that observed in control-animals, but nevertheless it may ultimately end in complete destruction of the eye. It is evident that a profound impression of some kind has been made upon the defensive resources of the animals by the preventive treatment, for the manner in which they react to the test-inoculations has been manifestly altered. This is in accordance with the observation of Kitasato, who, having succeeded in curing five guinea-pigs out of twenty-five treated by injections of tuberculin, found that cutaneous reinoculation was at once followed by intense local irritation, ending in the separation of a slough, which left behind it a healthy, granulating surface, no systemic infection of the animals resulting.

The introduction of living bacilli would appear necessary to the production of this relative immunity, and the inoculation of merely chemical substances contained in the cultures powerless to produce it, for all attempts which I have made to protect rabbits with sterilized growths of the avian bacillus, whether killed by heat, light, time, or carbolic acid, have proved negative. Curiously, however, in animals which have been prepared by treatment with dead cultures, the peculiar early reaction of the tissues to the virulent inoculation occurs to a certain extent, but the process goes on uninterruptedly to caseation and destruction of all the structures involved. The principle upon which the relative immunity thus obtained rests seems analogous to that which has governed Pasteur in his anti-rabic inoculations—*i. e*, the gradual habituation of the organism to a virus of greater virulence than that of the virus with which the test-inoculation is to be made.

In accordance with this view it may be noted that the occurrence of a tuberculous process that has become arrested does not protect against another and frequently rapidly fatal invasion of the disease, and all attempts at protective treatment with attenuated cultures of less virulence for the animals than those used in the test-inoculations have, as far as I am aware, and many times in my own experience, proved entirely unsuccessful. We find, also, that while the rabbit, which is very much more susceptible to the avian than to the mammalian bacillus, may acquire a certain degree of immunity to the latter by preventive inoculations of the former, the guinea-pig, which can rarely and with great difficulty be killed by the avian microbe, even when enormous doses of these cultures are injected, is in no way protected by this treatment, a fact that I have several times tested experimentally myself.

All attempts at the production of artificial immunity to tuberculosis in animals have hereto resulted in an unbroken record of failures, but recently Grancher and Martin claim to have succeeded in protecting rabbits, and Richet and Héricourt dogs, by preventive inoculations of avian bacilli. Their results show the same danger to the animals' health and life from the preventive treatment, the same uncertainty as to the production of immunity and the degree of production that it affords, as noted in my own experiments on the rabbit's eye. Richet and Héricourt have yet given no evidence as to the duration of the immunity they claim to have produced in dogs. Grancher and Martin's rabbits, however, outlived the controls by many months and even years, but in most cases ultimately succumbed to some complicating organic lesion other than tuberculosis, which is thought to have been the result of the toxic products injected in making the preventive inoculations.

Faint and fragmentary, therefore, as is the evidence that artificial immunity against tuberculosis is as yet anything more than a dream, this preliminary study of the effect of preventive inoculation upon the primary lesion in the rabbit's eye, when taken in connection with the experiments of the observers named, indicates a possibility of producing at least a relative degree of artificial immunity in this disease, and warrants the following conclusions:

1. Preventive inoculations of living cultures of avian tubercle-bacilli cannot be made in rabbits without some danger to the animal's health and life.

2. The tuberculous process induced in the eyes of rabbits which have been subjected to the preventive inoculations differs in its course from that observed in the controls, and may even entirely abort, ending in an almost complete restoration of the infected eyes—a result never observed in the controls.

3. Uncertain, imperfect, and generally only relative, as this artificial immunity against tuberculosis appears, it is nevertheless sufficiently marked to be demonstrable.

A MODIFICATION OF HEDIN'S HEMATOKRIT.[1]

BY W. F. ARNOLD, M.D.,
PASSED ASSISTANT SURGEON, U. S. NAVY.

I DO not know that there is any necessity to apologize for bringing up this matter when the direct references to it in the English medical literature accessible to me are contained in Von Jaksch's

[1] Read before the San Francisco Bacteriological Society, August 1, 1894.

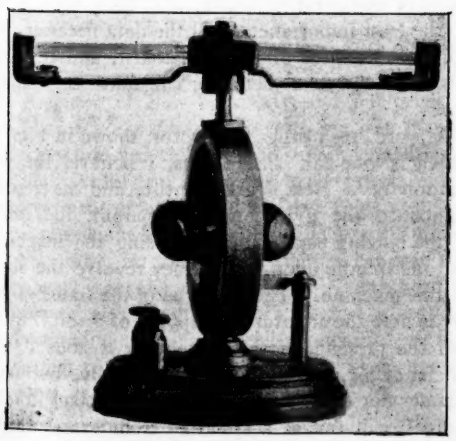
Clinical Diagnosis,[1] and the *New York Medical Journal*, February 3, 1894, p. 151. The latter reference gives an abstract of the contents of a paper by Dr. Judson Daland, read before the New York Academy of Medicine on January 16, 1894, to which I refer those interested for nearly all the practical information extant upon the subject. Dr. Daland, with Dr. Carl Sadler, of Prague, has for some time been collecting data relating to the instrument, in the ultimate usefulness of which he expresses an abiding faith on what appeals to me as a most rational basis.

My own irregular mode of life, almost devoid of free moral agency, from the very nature of my position, has prevented me up to the present time from adding any connected observations to those cited. I can only state that I have found the estimates of the numbers of the corpuscles by percentage-volumes, as given by Dr. Daland, correct within the limits assigned by him in the comparative estimations that I have made, using the Zeiss-Thoma hemocytometer; but these have been few in number, and not in all cases above reproach as to the exactness of their technical performance.

I hope to be able to make a number of observations upon the members of the crew of the U. S. Coast-Defense vessel *Monterey*, and upon opportunity to extend them so as to include pathologic blood-states; but this is a matter of conditional promise, and, like *obiter dicta*, of little binding force and effect.

On February 15, 1894, I devised a modification of Hedin's instrument, substituting rubber blocks

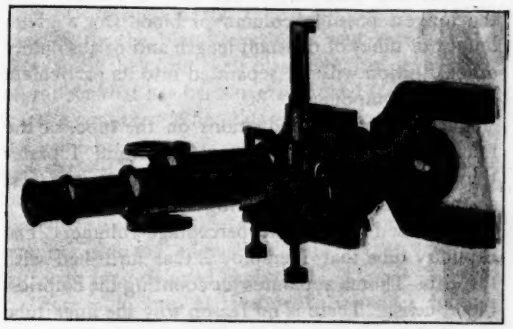
FIG. 1.



for the springs used to hold the tubes in place and to prevent leakage; it is shown in Fig. 1, in place upon a small electric motor hereinafter to be described.

It was with this now discarded design that nearly all of my observations have been made. I think it satisfactory as an hematokrit of the kind promulgated by its originator; and I believe that the further modification that I have introduced, of measuring the heights of the columns of corpuscles by direct reading with low powers (× 200 or less) of the microscope from the limb graduated for record-

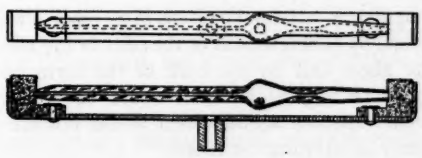
FIG. 2.



ing the lateral motion of the mechanical stage, instead of the set graduations upon the tubes containing the diluted blood, is really an improvement worthy of the name. The method of taking the reading is shown in Fig. 2, the microscope resting on a support upon the edges of its stage and of its foot, to prevent bevelling of the tops of the columns of the corpuscles, which occurs in other positions, from gravitation. Of course, some forms of microscopic stands will not lie in this position, but very little ingenuity would obviate this difficulty.

Within the past week, considering the sources of error introduced and the trouble involved in the

FIG. 3.



process of transferring the diluted blood from the capillary tube, for measuring and mixing, to the tubes of the hematokrit, I have designed a frame capable of receiving and holding during rotation the tube for measuring and mixing itself. This is shown *in situ* in Fig. 3, which is a reduced working drawing, complete even to the conventional hatchings for the representation of composition, of rub-

[1] Charles Griffen & Co., London, 1893, p. 25.

ber, and of glass. For this refinement I am indebted to a messmate, Passed Assistant Engineer G. S. Willits, U. S. Navy, who has made both the frame and this drawing of it.

With this arrangement the blood is diluted, and, after thorough mixing in the bulb, the capillary portion of the tube is filled with the mixture to its tip and placed in the frame and secured upon the motor, or upon the train of gearing for rotating. The result of effective rotation will be that all of the fluid above the center of form of the tube (its tip being considered as the lower end) will run into the bulb and that part of the tube above it, while the longest possible column of blood (for a given length of tube) of constant length and of absolutely exact dilution will be separated into its particulate and fluid components.

Then, either the graduations on the tube, or the microscope and its mechanical stage (and I prefer the latter as more nearly conforming to the best scientific methods of measuring with great accuracy), may be used to get the percentage-volume. The capillary tube that I employ is that furnished with the Zeiss-Thoma apparatus for counting the colorless blood-cells. There is no reason why the finer tube supplied for counting the red blood-cells should not be used instead. I employ the first named because it is more easily cleaned.

I am sorry that my experience does not enable me to speak definitely about the best diluent to be used. Separation is certainly easy with solution of potassium bichromate (2.5 per cent. strength, recommended by Daland[1] as the best of nineteen fluids tried); but I have found a liberation of gas—presumably oxygen—to be associated with the use of this, and it has proved troublesome by disturbing the layer of the colorless corpuscles. I have seen large bubbles rise and carry a line of red cells high into the supernatant liquid when the tube was under microscopic observation as depicted in Fig. 2.

By most fixing-solutions, such as Hayem's, separation is made impossible.

Coagulation vitiates the results in all cases in which it occurs, by entanglement of the cells in the meshes of the fibrin and by the bulk of the fibrin itself. It would be a great aid if it could be prevented by some vaporous agent, which would obviate the necessity of diluting the blood.

It would be a great mistake to imagine that, using blood thus diluted, the layer of colorless blood-corpuscles will obtrude itself upon the notice of even a reasonably careful observer. It is not, at least in normal blood, nearly so wide as a church door; and it is best described as a cream-colored or buff-colored tip upon the comparatively long column of red blood-corpuscles. Daland[1] indicates briefly this indefiniteness. I have found Müller's fluid, deeply tinged with methyl-violet, to aid somewhat in differentiating the layer of colorless corpuscles. It has the disadvantage of coloring the blood-plaques, which would, in that event, vitiate the result in proportion to their number. Daland says that this occurs in the absence of stains, or rather he notes a case in which the blood-plaques proved a source of annoyance.

Obviously, therefore, this instrument cannot replace the hemocytometer, which, with all its faults, will remain a claimant for interested favors, if not of affection, at our hands. But it may save time, and the great nervous strain inseparable from counting the squares, by indicating those cases that unequivocally demand its assistance. Personally, I have never found any employment so irksome as the accurate use of this excellent instrument of precision; hence I am willing, at the risk of imputation of laziness to myself, to allow electricity to remove this irksomeness, if it can be done (as I think it can be) in a perfectly trustworthy manner.

I hope sincerely that some of the gentlemen of the Bacteriological Society of San Francisco, or others of the medical profession to whom this product of enforced idleness may come, will find the subject of sufficient interest to enlist their aid in determining the limitations and the usefulness of the principle embodied in the instrument described. My own *clientèle* is limited perforce to men so carefully selected that dyscrasiæ, such as leukocythemia, should not, and as a matter of fact do not, often occur; so that the best results I could secure under exceptionally favorable conditions would deal only with states of comparative health, and these seem to be of the least importance of all the data necessary for the present status of the hematokrit, and its early establishment as a factor for constant use in diagnosis.

A word regarding the motor shown in Fig. 1, which is one-half size; it is, I believe, the invention of a New York dentist, and its resemblance to the gyroscope is apparent, the limbs of the moving part of that toy being the magnets, and the spindle upon which they revolve the shaft of this machine. The analogue of the frame of the toy is here the armature, composed of "soft" iron, and the presence of the current in it adds to the efficiency of the motor very decidedly, but in a manner not easily explicable, so electricians inform me. It will run at a speed of from 1200 to 2000 revolutions per minute in circuit with an ordinary incandescent lamp; and four Daniell or bichromate

[1] Loc cit.

[1] Loc cit., and American Journal of the Medical Sciences, vol. cvii, p. 511.

cells, or any good cautery battery, will drive it well with a fair load. I have used it for two years for centrifugal separation in urinalysis and for the little use I have made of Charcot's and Luys' *miroir rotatif*. It may be obtained from Frank Wilks, Scott's Wharf, Newport, Rhode Island, to whom I am indebted for much valuable information, and whose thoroughness as a designer and as an accomplished artisan it affords me much pleasure to acknowledge.

U. S. COAST-DEFENCE VESSEL "MONTEREY,"
NAVY YARD, MARE ISLAND, CAL.

STOCKINET COTTON AS A MATERIAL FOR BANDAGES; ITS ADVANTAGES AND USES.

BY W. A. CROSS, M.D.,
OF JENKINTOWN, PA.

IN calling attention to stockinet cotton as a desirable material for bandages I will state what it is, what I conceive to be its advantages, and some of the conditions wherein it is well adapted to meet the requirements of the individual case.

The material itself is simply the woven cotton as it comes from the loom, in long double strips, of different widths and thicknesses, suitable for being cut and shaped into stocking-legs. It possesses qualities that peculiarly fit it for so many of the requirements demanded of a bandage. It is soft, pliable, and elastic, easily adapting itself to inequalities of surface, giving firm pressure and support, yet so yielding that it admits of comfort and motion when motion is desired. It may be made of any length, width, or thickness; it may be washed and ironed just as a stocking is laundried, care being taken not to stretch it lengthwise, but drawing it out sidewise previous to rolling or folding it for use.

My attention was first directed to the use of stockinet for bandaging purposes by an article by Dr. W. W. Bremner, of New York City, and published in the *Medical Record* some two years ago. In that article attention was called to the superior qualities of this material for bandaging the lower extremities in the treatment of ulcers and varicose veins.

All physicians know how unsatisfactory the muslin bandage often is; and even the flannel bandage will not always meet the requirements. These need to be applied with the greatest of care and expertness, and even after the most careful application, we find upon their removal that the part has had very uneven pressure, as indicated by the many creases, depressions, and bulgings present.

The stockinet bandage is very easily applied—in fact, so simple is its application that any person of ordinary intelligence may be considered competent to put one on after a little instruction, and the material is so soft and elastic that it will easily conform to the contour of the part to which it is applied.

The various conditions of the lower extremities that necessitate the bandaging of those members can best be met by the use of this material, and will most plainly exemplify its qualities and advantages.

The lower extremities are always the dependent parts; the returning venous blood has the force of gravity to overcome; as assistants to the return we have the elasticity of the coatings of the veins, the valves which prevent the backward flow, and the contractions of the surrounding muscles when in action. If from long-continued pressure, or other form of obstruction, this return circulation is interfered with, the blood overloads and distends the veins until they lose their elasticity, just as a piece of rubber that has been overstretched loses its contractile quality. When this elasticity or tone is lost, the veins become varicose, and there result, by imperfect circulation, malnutrition, ulceration, and various other undesirable conditions. When this varicosity exists in a leg, a cut, scratch, or contusion may occasion an edematous state of the foot and leg, with long-delayed healing.

There is no form of treatment that will give such satisfactory results in the conditions enumerated as bandaging and rest. The very best place to get this care is in a hospital, but unfortunately, only a few of the many sufferers from these troubles can avail themselves of the advantages of hospital-treatment. The majority cannot have the care at their homes which is desirable; the father must earn the daily bread, the mother must care for her children and the numerous household affairs; the physician does the best he can under the circumstances, but how disappointing are his results in the majority of such instances.

To successfully treat varicosities, ulcerations, and other conditions that accompany and are dependent on these lesions, particularly when it is necessary for the patient to be on his feet from eight to ten hours out of the twenty-four, it will be necessary to give support to the over-distended veins and the relaxed tissues. As a rule, the rubber stocking is depended on for this support, but it is an uncomfortable thing to wear, it is expensive, and it rarely fulfils the purposes for which it is employed.

Stockinet as a bandage more nearly meets the requirements for the successful treatment of these cases than any other material with which I am acquainted; its easy application, thinness, and flexibility admit of exercise being taken with perfect freedom; it does not need to be removed and reapplied oftener than every two or three days.

In the treatment of wounds and ulcerations of the leg, when one wishes to use a local application, and should this dressing be of an oily nature, it may be

applied on fine lint or ordinary absorbent cotton, or such cotton rolled or compressed into sheets, and this covered with oiled silk that has a rubber finish, and the bandage adjusted; the stockinet will conform to the inequalities occasioned by the dressing, and even pressure will not be interfered with.

In all leg-bandaging we could do no better than follow the directions given by Dr. Bremner, as follows:

"The patient, seated in a chair of ordinary height, should place his foot on a stand of the same height, or on the corner of the chair on which the operator sits, and, wherever the wound may be situated, the bandaging should always be commenced at the foot. The first turn should be made over the center of the ankle, going under the foot in a figure-of-eight; the second turn should go half an inch higher than the first, again going under the foot, and one turn around the front of the foot close to the root of the toes; the third turn should go half an inch below the first, then under and once around the foot again; the fourth half an inch over the second, and the fifth half an inch under the third, each turn going under and around the foot once only for each turn around the ankle and coming just to the root of the toes. In cases where the wound or ulcer is below the ankle it is necessary, in addition, to make two or three turns directly under the heel, coming over the instep in front.

"The bandage must then be made to ascend the leg by spiral turns of about half an inch each until the center of the calf is reached; above the center the turns should ascend from an inch to an inch-and-a-half each. It is very important to attend to this point, as the bandage exerts all its force at the calf, and if too many turns are put on, the circulation beneath is obstructed. No reverses should be employed. If you use a six-yards bandage and more than two rolls are used, all but the last should be commenced at the foot; the last roll in every case should be applied from above downward in inverse order to the first. A stocking can easily be drawn over the bandages without disturbing the folds.

"In applying the bandages the greatest care should be taken to regulate the pressure in such a way as not to cause stagnation of the venous circulation in the foot. This can be done by always applying rather more pressure to the foot than to the leg. The ideal is to have the pressure graduated in such a manner as to be greatest at the foot, and evenly and gradually less in ascending the leg."

The interference with the venous circulation in the lower extremities which occurs so frequently during the period of gestation, which occasions such distress and does violence to the integrity of the coatings of the veins, may be successfully combated by this form of bandaging, and will not greatly interfere with the movements of the patient. In fractures of the long bones it is a very desirable bandage to use, but only in exceptional cases has it any advantage over the ordinary roller bandages of muslin or gauze.

In the dislocations and sprains occurring in the extremities it is of the greatest service. Having had the professional oversight of one of the teams connected with the Inter-Academic Athletic Association for several years, I have had quite an experience in the treatment of the various injuries unavoidably associated with the exercises of the gymnasium and with the playing of the games of foot-ball and base-ball.

In this class of injuries the bandage plays a most important part in the treatment; whether it is desired to secure the proper compression and support, with absolute rest for a season, or whether limited motion is permissible or desirable, nothing has met the requirements so satisfactorily, in my experience, as the stockinet bandage. In cases in which a joint has been injured by dislocation or strain, and in which it has been the usual habit to depend on the rubber cap for support, I have found stockinet to meet the requirements in a much more satisfactory manner, so that I use it to the exclusion of all other appliances. My praise and advocacy of the use of stockinet as a superior material for bandaging may seem somewhat inordinate, but it has proved to be so serviceable and satisfactory that I have wished to bring it to the attention of the profession in order that its qualities may be tested, proved, and appropriated.

CLINICAL LECTURE.

EXTERNAL PERINEAL URETHROTOMY.

A Review of Nine Cases.

BY W. B. ROGERS, M.D.,
PROFESSOR OF THE PRINCIPLES AND PRACTICE OF SURGERY AND CLINICAL SURGERY IN THE MEMPHIS HOSPITAL MEDICAL COLLEGE.

YOUR attention is requested to-day, gentlemen, to a detailed review of the salient points in the nine cases of external perineal urethrotomy that you have witnessed at this clinic within the past few months.

On the board you see diagrams of the conditions existing at the time of operation in the first eight cases, in all of which stricture of the urethra existed. The ninth operation was exploratory in a case of cystitis, which proved irremediable. It is hoped that you have kept careful notes of these cases and that you will follow me closely. I do not feel that any apology for this review need be made. The importance of the subject warrants its frequent presentation.

Collectively these cases present nearly every condition for which you will be called on to do the operation of external perineal urethrotomy and nearly every local complication you will likely encounter in a lifetime-practice in this department of surgery; therefore, I trust this review will neither prove uninteresting nor unprofitable.

The operation was imperative as a life-saving measure in at least four instances, and sooner or later the same condition would have been reached in four others. Of the evident relief afforded in all but one case you can testify. The ninth case was exploratory upon the bladder.

In no case was there hemorrhage of any consequence. In none was there a history of traumatism to the urethra to account for the stricture; hence the contractions were attributed to admitted gonorrhea.

External perineal urethrotomy is done for various

purposes, namely: To facilitate the use of instruments within the bladder in the removal of tumors, calculi, and foreign bodies introduced from without; to facilitate the use of instruments in operations on the prostate gland and removal of prostatic calculi; for the removal of calculi engaged in the urethral canal; for the relief of stricture of the membranous urethra; to insure drainage, as well as free escape of urine, in cases of a urethra ruptured traumatically or otherwise, as well as to divert the urine and give rest to the anterior urethra after operations thereon; to give a more direct course to the bladder for the introduction of the catheter in cases of retention from enlarged prostate; lastly, as a part of the operation for securing drainage and consequent rest to a chronically inflamed bladder.

When preparatory treatment can be instituted do not fail to thoroughly cleanse the alimentary canal, preferably by the use of calomel and soda.

Always examine the urine for tube-casts. Sometimes they admonish not to operate; again, when operation is imperative, they modify the prognosis.

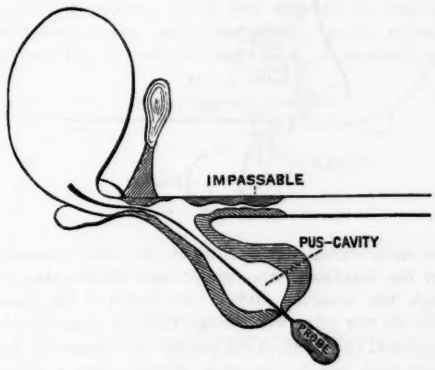
If the urine is hyperacid give an alkali; if alkaline from decomposition in the bladder, benzoic acid is serviceable, five grains every four hours. For scanty urine give lemonade in abundance. Before doing any cutting or dilating in the urethra never fail to thoroughly irrigate the canal and all pus-infected surfaces when they can be reached, and never fail to repeat the irrigation (including the bladder) after doing an external perineal urethrotomy. Always retain a catheter in the bladder to prevent contact of urine when this is of bad quality.

Quinin, either as preventive or curative of rigors following manipulations or operations on the urethra, has proved a masterly failure in my experience. If the patient is bilious and comes from a malarial climate, quinin, with mercury, is indicated, because shock often brings on a malarial chill, but for rigors *per se* and recurring, no benefit follows from the administration of quinin. Opium hypodermatically does more to prevent rigors than all else in the way of drugs. Protect the cut or dilated surfaces from contact with urine. Correct abnormal conditions of the urine before operating, and if there be no kidney-complications, rigors will not be of serious import. Lastly, a sound, full size, under anesthesia, local or general, should be introduced between the third and the fifth day after the operation, and reintroduced at intervals of from three to six days, until the wound has healed, and its use continued at proper intervals so long as there is any tendency to recontraction when the operation has been undertaken for the relief of stricture.

CASE I. *October 1, 1893. Impassable urethral stricture; urinary scrotal abscess.*—Robert S., a white, thirty-two years old, presented a temperature of 103°, a pulse of 140, and a history of fever, and an average of three rigors to the twenty-four hours for the previous ten days. The secretions were all bad. The bowels were constipated. The scrotum was immensely swollen, and red, and fluctuation was distinct at its base. The urine escaped by driblets continually, but by forced effort the bladder could be nearly emptied. The first indication was the evacuation of the scrotal abscess. On incision a quantity of pus and decomposing urine escaped. No effort was made to enter the bladder through the urethra, as the urine was now easily voided through the scrotal opening. A urinary fistula was therefore completed. Cathartics were prescribed, and on the next morning our patient was free from fever and quite comfortable. Ten days elapsed before you again saw him. His general condition had meanwhile much improved, and time had allowed the local condition to mend. Much of the inflammatory thickening had disappeared, but the parts were not in good condition for operation, and yet an evening rise of temperature warned that the bladder needed relief.

Accordingly, exploration of the urethra was made. You will recall that there existed a stricture, as indicated in Fig. 1, which failed to admit even the filiform guide.

FIG. 1.

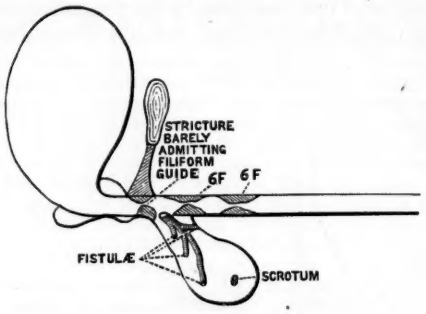


Just behind the stricture was the opening in the urethra, and it was by this channel that the urine came originally into the scrotal abscess-cavity, now a fistula. You will recall how much difficulty was encountered in passing a probe through the fistula, to the urethra, in through this opening, and on down the rugged cicatricial perineal region. However, the probe was finally located in the membranous urethra, after first being introduced and then withdrawn from several sinuses which honeycombed the perineum. The section was made on the probe as a guide, and after washing out the bladder, the urethra was followed forward to the meatus, the urethrotome introduced, and all contractions cut, so that a No. 32 F. sound passed the entire length of the canal. The hemorrhage was slight. A catheter was placed in the urethra and bladder, and retained for a few days. The patient made an excellent recovery; the fistula healed, and a No. 29 sound passed easily. Let me remind you that this is the patient whom I found in almost the same condition, and whom I afforded the same relief by external perineal urethrotomy eight years before. The case should teach you the same lesson that I hope he has learned, not to neglect the use of the sound after operations for stricture. The dribbling of urine resulted from an over-filled bladder, which, with the aid of the abdominal muscles, could be partially emptied, but some urine was always left, called residual urine. The fever resulted from the infiltration of the scrotum when first presented; later on the residual urine by decomposition caused the evening rise of temperature. When there is an acute inflammation, with pus and putrid urine in the

tissues, you will often find, after evacuating the focus of infection, that a little delay will afford a better field-tissue to work in, and consequently a better result.

CASE II. *October 7, 1893. Multiple stricture, with fistulæ and infiltration of urine.*—Andrew Y., fifty-eight years of age, was referred to the clinic by Dr. Wright, of Mississippi, with a history of long-standing urethral obstruction, which, on examination, was found to be due to three narrowings, as shown in the accompanying diagram (Fig. 2). There was active inflammation of all the

FIG. 2.



tissues surrounding that portion of the canal contained within the scrotum. Six fistulæ were discharging pus through the scrotum and at the base of the penis. Nearly all the urine was voided through these fistulæ. The general condition of the patient was miserably bad.

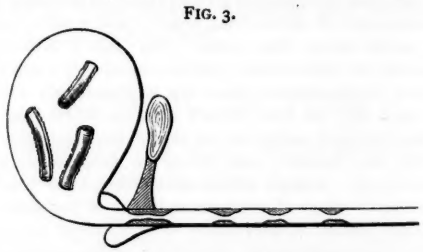
It was with much care and patience that a filiform guide was passed into the bladder, and, over this, Rogers' tunnelled urethrotome, aided by a little firm pressure, was guided past the membranous portion of the canal; then the bulb was formed, and the contractions cut to full size as the instrument was withdrawn. The deep stricture was cut in the floor of the canal, and the instrument was then reversed so as to cut the penile contractions in the roof. A staff was readily passed into the bladder, and on this the perineal urethra was laid open its full length from without. The various fistulæ were explored with a grooved director and laid open, so that thorough drainage was secured for these pus-infiltrated parts. The bladder was then emptied of a pint of foul urine and thoroughly irrigated. Examination of the bladder with the finger through the dilated prostatic urethra failed to disclose a calculus. That no urine might come in contact with the newly-cut surfaces until granulations were well established, a soft-rubber catheter about the size of the urethra was now passed into the bladder, but before this was done a double silk ligature was passed through the wall of the catheter (avoiding encroaching on its caliber), about three or three-and-a-half inches from its point; then when the catheter was passed the ligature was found lying in the wound. A piece of gauze, folded to a size to fill the wound, was packed into it, and tied to the catheter by means of a ligature. This tampon of gauze served two purposes. It kept the catheter from escaping from the bladder, and it also checked the hemorrhage. The usual dressings of gauze and cotton, and a T-bandage were now applied, and the patient was put to bed.

External perineal urethrotomy was not only the safest procedure in the treatment of the deep stricture, but it was indicated to give rest to the anterior portion of the canal surrounded by fistulous tracks; besides, a thorough digital exploration of the bladder in such cases is highly satisfactory, and often reveals the presence of unsuspected foreign bodies.

Hemorrhage was but slight, and the patient made an excellent recovery. Sounds were reintroduced at proper intervals, and the patient returned to the clinic for dilatation up to March 8th, when all of the fistulæ had healed. A No. 30 F. sound could now be passed. There still existed much peri-urethral induration.

CASE III. *November 19, 1893. Cystitis; multiple stricture; foreign body in bladder.*—H. W., thirty-six years old, who was sent to the clinic by Dr. Branch, had suffered more or less with cystitis for five years, and had had a stricture for about the same length of time. His suffering had become intense, and urine was passed every few moments. Examination of the urethra revealed several contractions, as shown in the accompanying diagram (Fig. 3). External perineal urethrotomy

FIG. 3.

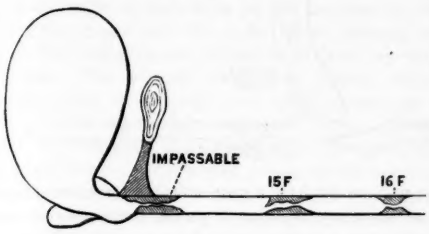


was determined upon, because of the number and the small caliber of the strictures. Free escape of urine through a perineal incision is safer than allowing the fluid to pass over multiple urethral incisions. Moreover, the contractions were very resistant to the sound, arguing against treatment by gradual dilatation. A small staff was passed and the perineal urethra laid open from without. My finger was passed into the bladder and a foreign body felt. With forceps three segments of a soft-rubber catheter, as you see here, averaging an inch each in length, were extracted. They are encrusted with phosphates precipitated from the urine. Here you have an example of a foreign body acting as a nucleus to a stone, and this case ought to re-impress upon you the advisability of putting your finger in the bladder whenever this is practicable. The urethra was cleared of all contractions. The patient, on coming from the anesthesia, recalled the time two years before when he lost the piece of catheter, but had forgotten to tell us before operating. He made an excellent recovery.

CASE IV. *November 22, 1893. Cystitis; multiple stricture.*—H. R., thirty-nine years old, suffered intensely with chronic cystitis. His symptoms began many months before, and had gradually grown worse, finally necessitating the act of urination every twenty minutes. The stream was very small. Examination with bulbous sounds located two penile contractions of the caliber as shown in the appended diagram (Fig. 4), while the membranous urethra here was so narrowed that it was impassable to instruments. Treatment by gradual dilatation was contra-indicated by reason of the impassability

of the stricture and the urgency of the symptoms. The bladder loudly demanded rest. A small staff was passed just into the membranous urethra. It was firmly pressed against the stricture and then reversed, its point being thrown toward the perineum, after Fleuhrer's practice, and the canal was opened by an incision through the perineum. Thus we were at the distal extremity of the membranous structure. The lips of the wound in the

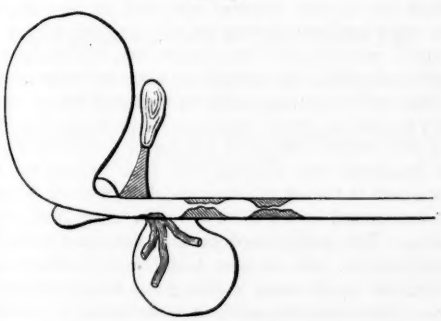
FIG. 4.



urethra were seized with forceps and held apart, and then with much teasing the small probe was passed along the tortuous and narrow canal into the bladder. Along the side of the probe a grooved director was forced until a drop of urine appeared, showing that the bladder was reached. The probe was withdrawn and the floor of the membranous urethra laid open upon the director. Internal urethrotomy on the two anterior strictures gave easy admission to a No. 32 F. sound. On January 4th the patient was dismissed, after passing in your presence a No. 32 F. sound.

CASE V. *December 19, 1893. Two penile strictures; multiple urinary fistulæ.*—G. G., forty-five years old, presented two pronounced urethral narrowings, as shown here in the accompanying diagram (Fig. 5). The pos-

FIG. 5.

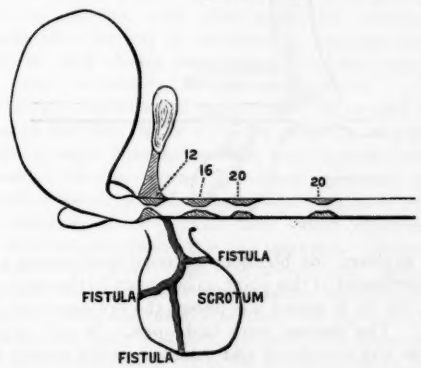


terior one involved the bulbous portion of the canal, and was so small in caliber that the urethra behind it, from the pressure of urine forced by the inflamed bladder, had given way. The urine first gave rise to the formation of an abscess, and later found vent through the three fistulous openings, as shown. All of the urine escaped through the fistulæ at the time the man was presented. His condition was bad in the extreme. Fever, pain, emaciation, constant and slow poisoning from the presence of pus in the scrotal tissues, together with cystitis, promised an early death. In this case internal urethrotomy alone might have been done and relief possibly obtained, but I greatly prefer doing the perineal operation from without in such cases, in addition to the internal penile urethrotomy. The posterior outlet affords rest to the inflamed anterior segment of the urethra, and you get more rapid improvement, both local and general; and this case truly exemplified such teaching.

The external perineal urethrotomy was done, and the bladder explored and irrigated. The patient steadily improved during the eight weeks of his attendance here, but, like most of this class of patients, as soon as the fistula had healed and he was getting along well he gave up treatment. The probability is that we shall see him here again next year in the same condition.

CASE VI. *January 9, 1894. Multiple stricture; four urinary fistulæ.*—G. R., thirty years old, had had repeated attacks of gonorrhea, which had resulted in numerous contractions of the urethra, as shown in the appended diagram (Fig. 6), which shows four pronounced stric-

FIG. 6.



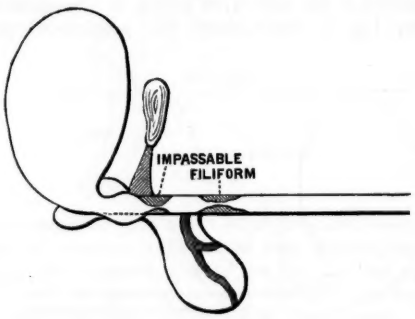
tures, ranging from a caliber of No. 20 down to No. 12 F. You will recall that the first step was an internal urethrotomy on the anterior urethra, cutting everything to size No. 30. Next, the point of a small staff was engaged in the membranous urethra; then the instrument was reversed so that the convexity was directed toward the pubis and the point bulged in the perineum. This is a procedure suggested and practised by Fleuhrer, and is worth remembering. It has frequently done me good service. With the point of the staff pressing toward the perineum the opening was easily made. The membranous urethra was laid open its full length. A No. 30 F. sound was passed. A catheter was then introduced and retained in the urethra by the means described in the report of Case II. Through this catheter the bladder was thoroughly irrigated; and the patient was sent to bed.

On February 1 sounds Nos. 30 and 32 were passed. The patient left the hospital, but returned frequently for the introduction of the sound, and is doing well. All of the fistulæ have healed.

CASE VII. *February 20, 1894. Two strictures with fistulæ; operation without a guide.*—O. W., thirty years old, gave a history of repeated attacks of urethritis. He passed water with much difficulty. There were two strictures, with two fistulous openings, as shown in the

accompanying diagram (Fig. 7). The perineum was inflamed, hardened, and infiltrated with pus. Every effort to pass a filiform guide into the bladder failed, and an incision was made through the perineum without a guide. The case was rendered especially difficult by reason of the condition of the perineum already described. No anatomic landmarks in the soft tissues were left, and reliance had to be placed on the sense of touch, aided by a good light. The perineum was carefully incised, keeping line by line well in the middle, with the left index finger guiding until the corded urethra was located, exposed, and seized with a tenaculum. The canal was then opened, and the small probe passed into the bladder; then this small director, on which the stricture was divided. The prostatic urethra was dilated, and the

FIG. 7.

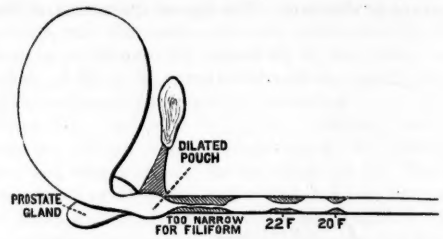


finger explored the bladder. Internal urethrotomy was next performed at this point, as indicated by the stricture, and a No. 32 F. sound was passed the full length of the canal. The sinuses were laid open. A soft rubber catheter was introduced and retained in the urethra for three days in the manner described In the report of Case II.

On March 8th the patient was doing well, and a No. 30 F. sound was passed.

CASE VIII. *Multiple impassable strictures; external perineal urethrotomy without a guide.*—G. B., thirty-eight years old, a white man, gave history of repeated attacks of gonorrhea. A stricture was known to have been in existence for several years. When the man presented himself he passed a pin-hole stream of urine with much pain, and was having fever every evening. The urine was voided with pain every half-hour, both by day and by night. You will recall that under anesthesia every effort was made to pass an instrument into the bladder, but without success. The filiform guide, even, failed to enter. The appended diagram (Fig. 8) shows the location of the various contractions and the caliber of each. The guide would not enter the perineal urethra. There was no peri-urethral collection of pus, no false passages to mislead. The perineum was in its normal condition. External perineal urethrotomy was done without a guide. You will further recall that very little trouble was experienced in finding the urethra just anterior to the prostate gland, where, as I have shown you on the diagram, this dilated condition existed. Upon opening the urethra in this dilated part, the next step was to explore the bladder with the finger, and allow me to again recommend that you do not fail in these cases to do this. No stone was found. The canal was then traced forward, the urethrotome freely used, and a full-sized sound passed. After ten days the patient was up and left the hospital, able to pass a No. 30 F. sound.

FIG. 8.



You will rarely find a case suitable for external perineal urethrotomy without a guide presenting so anatomically clear a perineum; and the ease of performance of the operation in this case should not mislead you to consider it a trivial procedure. A correct understanding of the anatomy was all that was needed in this instance, but do not forget Case VII, which presented such a contrast to this.

The pouch-like condition of the urethra is said by Cocke to exist in all cases of impassable stricture of the membranous urethra. The mechanism of the formation of this pouch I have more than once explained to you.

CASE IX. *February 10, 1894. Chronic cystitis.*—Wm. McD., a white man, twenty-three years old, had been for twelve or more years a sufferer with cystitis, the origin of which he could not explain, never having had any venereal disease. Aside from the bladder-complaint his general health was excellent. His left hip-joint was ankylosed and the limb was a little shortened in consequence of an arthritis in early childhood. The call to urinate was almost constant, and had to be complied with every half-hour during the day, and his getting up at night, urinating and returning to bed, had become so nearly automatic, that though for years he arose a score of times each night, his health had suffered little or none. He was able to attend regularly to his work as cashier in a retail store. His urine had never contained blood, but frequently was clouded with pus. There was not much pain in the act of urination, though much discomfort was caused by an effort to retain more than a few ounces. The patient had been under observation for some months. At no time had I found tube-casts or epithelium in the urine pointing to a kidney-complication. There was, however, an abundance of pus, and the urine was either neutral or alkaline in reaction. At times the urethra showed inflamed patches when viewed through the endoscope. There was no urethral narrowing. Each introduction of an instrument into the deep urethra, whether cocainized or not, caused dizziness and, if persisted in, fainting.

I had failed after repeated explorations to find any stone. Medicinal therapeutics had been appealed to, but had signally failed to afford any relief. Irrigation of the bladder had not afforded benefit, and I found that the bladder would not retain more than three ounces of warm solution. An effort was made to overcome the

contracted bladded by hot-water injections, but I was unable to increase its holding-capacity. Having exhausted all of these resources for relief, I determined on digital exploration of the bladder. The viscus was not susceptible of dilatation, so that suprapubic cystotomy was not practicable. A subpubic route was thus forced upon us. The ankylosed hip caused but little inconvenience in performing external perineal urethrotomy. With my left forefinger introduced into the bladder I found the walls of the viscus (as felt between the finger within the cavity and the right hand pressing down above the pubis) hypertrophied to at least an inch in thickness. The vesical cavity was divided into two compartments, so to speak, by a slight transverse narrowing, while the surfaces felt very rugged and ulcerated. As nearly as I can describe the condition, it resembled the inner surface of a hide newly taken from a beef by a novice at skinning. I could easily explore the entire surface within, and found neither tumor, pocket, nor calculus. The case was one of chronic inflammation of the bladder; the question of causation was obscure and of no interest now, because we had before us the effect of prolonged inflammation, a thickened, hypertrophied bladder, not amenable to any treatment. The neck of the bladder was forcibly dilated, and paralyzed temporarily. At the end of a week the patient was up, with the wound nearly closed, and able to retain urine for an hour and a half at a time. After four weeks the bladder had resumed its former half-hour regularity of action. The patient was fitted with a rubber urinal for use day and night.

In this case you saw a condition that needed treatment —one like many that you will encounter in practice, whose cause you cannot remove, because you cannot locate it, and, in fact, an original cause often ceases to act, leaving behind it a morbid condition, which sometimes is one that we cannot remedy.

CLINICAL MEMORANDUM.

THREE CASES OF GLYCOSURIA COMPLICATING ATTACKS OF APPENDICITIS,

With the Report of a Case illustrating Nature's Rôle in Effecting a Cure.

BY JOSEPH LEIDY, M.D.,
OF PHILADELPHIA.

So far as I have been informed, glycosuria has not been noted as a condition complicating appendicitis. The following notes of several cases that have come under my observation during the past three years may prove of some interest to those interested in this, one of the most important affections that the physician and surgeon has been called upon to treat during the past decade.

The first case is that of a young woman, referred, during the fall of 1890, to the Pennsylvania Hospital by the late Dr. D. Hayes Agnew.

L. H., twenty-nine years of age, single, of good family history, enjoyed good health until the age of twenty-three, six years ago, when she was seized with an attack of obstruction of the bowels (which was the diagnosis made at that time). Since then she has been the subject of recurrent attacks of inflammation in the right iliac fossa, presenting the classic symptoms of appendicular troubles. A firm irregular tumor formed in the right iliac fossa after the first attack, and this has remained. Examination upon admission to the hospital showed the presence of an indurated mass in this region, which had become firmly adherent to the overlying tissues. At a point midway between the anterior superior spinous process of the ileum and the spine of the pubic bone, two inches above, in the line of the iliac artery, is a sinous opening, which had formed since the last attack, three weeks before. Upon the introduction of a probe the point of the instrument came in contact with a hard foreign body, one and a half inches from the opening. The patient applied for treatment, an operation if necessary, to relieve her from her suffering. Her physical condition was fair, notwithstanding her complaint, which, however, was fully explained by future developments. An examination of the heart and lungs proved negative. Urinary analysis showed the urine to have a specific gravity of 1032, and to be pale-amber in color, alkaline, with some sediment. Microscopic examination proved the presence of oxalates and epithelium; and chemic examination disclosed sugar, 2½ per cent.; no albumin or casts were present.

Owing to the inflamed condition of the surface of the skin in the iliac fossa, with the presence of a foreign body, a large flaxseed poultice was applied over the tumor. On the second day there presented at the mouth of the sinus a hard mass, three-eighths of an inch in diameter, which proved later, upon examination, to be inspissated feces; this was removed. Under local treatment the mass rapidly subsided, and before the woman's discharge from the hospital the sinus had healed perfectly, with complete absorption of the induration. This patient made a perfect recovery. The sugar gradually disappeared from the urine, and six months later it had entirely disappeared. It is now four years since the woman came under treatment, and she enjoys perfect health; there has been some gain in weight, and she suffers no disability. The urine is negative. The physical condition of this patient was good upon her admission to the hospital, and was doubtless to be attributed to the attempt on the part of Nature to effect a cure by throwing off the materies morbi, the irritating factor, through an external channel. It is interesting as showing an important rôle which Nature often plays in inflammatory conditions—never, unfortunately, to be depended upon.

The second case was that of J. R., forty-six years old; single; a housemaid; who presented herself at my office during May, 1892, having been under the care of several medical advisers during the previous two weeks, for attacks of acute indigestion. She had always enjoyed perfect health.

The following I transcribe from my case-books: "Temperature 103.4°; pulse rapid, 110; respiration 28; a thickly furred tongue. The patient complains of much nausea, with pain about the umbilicus; the bowels are constipated. Examination of the abdomen showed the presence of a hard mass, the size of a duck-egg, in the right iliac fossa, where there is sensitiveness to pressure. The patient is perspiring from weakness, following the physical examination." She was sent home and placed in bed. An examination of the urine at this time showed a trace of albumin and considerable sugar, with a

specific gravity of 1028. She was the following day transferred to the Pennsylvania Hospital; here she remained thirteen weeks. Frequent examinations of the urine showed the presence of sugar in varying quantities. Under non-operative treatment this patient improved. Unfortunately, after her discharge all trace of her was lost.

My third case was that of A. S., a male, twenty-five years old, single, and greatly emaciated, owing to frequent attacks of appendicitis. He had been treated for several attacks of inflammation of the bowels and for lung-trouble during the past two years. This patient was seen for the first time six months ago, during an attack of severe abdominal pain, attended with exquisite sensations over the whole abdomen, high fever and constipation, which suggested a beginning peritonitis. The focus of pain could not be located. Under absolute rest and medical treatment the inflammatory condition slowly subsided, and soon became localized to the right iliac fossa. After a week of the treatment outlined, all pain and tenderness had disappeared, except over a small area that could be covered by a silver dollar. Over the so-called McBurney's point, upon deep pressure an irregular, indurated nodule could be felt. A continuance of absolute rest, liquid diet, local treatment in the form of poultices and enemata, enabled me to subject the whole abdomen to the severest pressure, without eliciting the slightest pain except over the nodule spoken of. An examination of the urine at the beginning of this attack showed the presence of sugar, a trace of albumin, no tube-casts, and specific gravity 1032. Owing to the extreme emaciation of this patient, with signs of beginning pulmonary disease, with the possibility of the etiology of the condition being tuberculous, operation was postponed until he had regained sufficient strength. At an unfortunate moment during convalescence, feeling so much better, he left his bed to indulge in a too generous meal. This induced an attack of indigestion, followed by constipation, and a relapse worse than the first attack, which he feared would terminate in a general peritonitis, However, he made a fair recovery, and after a prolonged convalescence gained sufficient strength to leave the city. He has steadily improved, and this I was informed has always been the case when at the seashore. During convalescence the sugar disappeared, only to recur in varying quantities. This patient has gone a week without the slightest trace of sugar being found. At this writing sugar has been noted but once during the past four weeks. He remains under treatment, and I shall again report as to the progress of the case.

These cases present the condition of glycosuria complicating appendicitis. In one case the sugar entirely disappeared; in the second the result is negative, owing to my inability to trace the patient; in the third there was a decided betterment. The first case presents Nature's part in her rôle as a friend to the surgeon.

That irritation of the lymphatic nervous symptom has occasioned glycosuria, so-called reflex glycosuria, has been recognized, and in all probability is the explanation of the existence of glycosuria in these cases. The symptom may be considered rare, as in a large number of patients suffering from this condition which have come under my observation I know of but one other, and that is the case to be reported by Dr. T. S. K. Morton. This, I believe, however, is a case of true diabetes.

THERAPEUTIC NOTE.

OXALIC ACID IN COMBINATION WITH IRON AND MANGANESE PEPTONATES AS AN EMMENAGOGUE IN CHLOROSIS.

BY HOMER C. BLOOM, M.D.,
INSTRUCTOR IN GYNECOLOGY IN THE PHILADELPHIA POLYCLINIC AND OUTDOOR SURGEON TO THE GYNECEAN HOSPITAL.

NEARLY a year ago I reported a number of cases in which I obtained successful results from the use of oxalic acid as an emmenagogue and oxytocic.[1] Since that time I have been able to gather a larger number of cases, making the clinical data more satisfactory, as well as establishing this therapeutic procedure upon its true basis. The apparent success at the time seemed to indicate that oxalic acid was indeed the ideal emmenagogue, but subsequent experience has shown that it, like all other drugs or supposed specifics, frequently disappoints in its results.

It is not the intention of this article to belittle or undervalue the therapeutic position of oxalic acid as an emmenagogue, but, upon the contrary, to place it in its true position; for I look upon it, other conditions being equal, as the surest and safest emmenagogue. My early enthusiasm was, I confess, excessive, as more recent clinical studies have shown; and it is to correct as nearly as possible the unintentional over-valuation of the power and value of the drug that these introductory remarks are made.

Since October, 1893, I have employed oxalic acid as an emmenagogue in over one hundred cases, including all forms of amenorrhea; for instance, that dependent upon pelvic disease, the functional perturbation consequent on exposure to cold during the menses, traumatic injuries, and emotional shocks.

Here I would note that the only rational explanation of the frequent cases of amenorrhea occurring among girls or young women following a sea-voyage is to be found in some peculiar nervous phenomenon which is emotional in character; and these cases strengthen the theory recently announced of the nervous origin of menstruation, for in the great majority there seems otherwise to be little deviation from health. It is in this class of cases that oxalic acid will establish the menses in nine cases out of ten in which there is no serious nutritive disturbance.

In cases in which there is a deviation from health which acts as the predisposing cause of the amenorrhea, oxalic acid, uncombined with other treatment looking toward the establishment of a better hematosis, to an improved general nutrition, and to a more nearly normal action of the nervous system, will utterly fail.

From experience gained since the publication of my first article on this subject, I am disposed to think that there are many cases of pregnancy in which oxalic acid fails to display ecbolic power, although in a certain number of cases it is a reliable and safe oxytocic; so that I would trust it in all such cases as the safest and most expedient remedy for the termination of a pregnancy for legitimate purposes.

[1] See THE MEDICAL NEWS, October 14, 1893, p. 431.

When my previous article appeared I had very little experience with the use of oxalic acid in the treatment of chlorosis, and I asked for the drug a more extended trial. Since that time I have had abundant evidence to demonstrate its uselessness in the large majority of cases, uncombined with other drugs looking to the correction of the function of hematosis.

Once in a while a case has been met with in which the anemia was not very pronounced, and in which the acid has seemed to govern, in some way or other, the function of hematosis and bring on the menses.

In a certain number of cases of chlorosis all the usual therapeutic measures fail. A large percentage of cases of amenorrhea are in turn due to chlorosis, and the suspension of menstruation may be viewed as a conservative effort on the part of Nature to spare the system every unnecessary tax or expenditure.

The therapeutic indication, therefore, is not alone the re-establishment of the menstrual flow, but rather the restoration of the general health. With this in view, I have employed a combination of iron and manganese peptonates, which I found to be readily and easily assimilated.

It acted well in cases of deranged functional hematosis, in which there was pronounced chlorosis, with amenorrhea, although it failed in a large number of cases to reëstablish the menses long after the anemia had disappeared. Why this should be so I cannot say. We know from clinical observation that after the entire disappearance of the condition of chlorosis itself, there is often a persistent amenorrhea; and we further know that in these cases there is a strong neurotic element, which may account for the derangement of function which manifests itself in the form of amenorrhea.

With these points in view, and having had my attention so strongly attracted to the peculiar action of oxalic acid in certain cases, and especially in chlorotic cases in which the nervous phenomena were more or less pronounced and the amenorrhea failed to yield to the betterment of the function of hematosis induced by the administration of ferruginous salts, I was led to prescribe oxalic acid in combination with iron, with the result that the amenorrhea was cured; and with a restoration of the menses the nervous phenomena disappeared.

The formula used is as follows:

℞.—Ferri peptonat.	. . . .	gr. xij.
Mangani peptonat.	. . . .	gr. ij.
Acid. oxalic., C. P.	. . . .	gr. ij.
Alcoholis	. . . . .	ʒiij.
Aquæ	. . . q. s. ad	ʒiv.—M.

S.—ʒij t. i. d.

While the results are obvious, the mode of action of the drug is not so clear. Perhaps this is to be found in an influence exerted on the nerve-supply of the organs directly concerned in the function of menstruation.

1427 WALNUT STREET.

The New York State Association of Railway Surgeons will hold its annual meeting on November 15, 1894, at the New York Academy of Medicine. All railway surgeons of the State are invited to be present.

NEW DEVICES.

A SIMPLE AND EFFICIENT TEST FOR BINOCULAR READING.

BY CARL WEILAND, M.D.,
CLINICAL ASSISTANT, EYE DEPARTMENT, JEFFERSON MEDICAL COLLEGE HOSPITAL, PHILADELPHIA.

IT is frequently of importance to know whether both eyes assist each other properly in the act of reading, or whether one eye only is used, while the other deviates or otherwise neglects its duties. The usual test of holding a prism, base up or down, in front of one eye and observing whether or not a point looked at is seen double, is not quite decisive; because such a high prism always throws the image of its eye outside of the macula lutea, and thus gives rise to an entirely abnormal and unphysiologic condition. We are not allowed to assume from this test that the eye which receives the retinal

image thrown outside of the fovea will therefore also take part in the act of reading, as the fovea might be affected with a scotoma, or the whole eye be in a position of heterotropia, and avoid diplopia by suppressing its image. For this reason a little apparatus is here brought forward which allows a test under strict physiologic conditions, and which, in one form or other, has probably been employed already by some ophthalmologists.

It consists, as the figure shows, of a rectangular piece of wood, into which a brass rod, five mm. in diameter, is screwed. This rod is bent at a right angle, so that the free part extends parallel to the surface of the wood at a height of about fifty mm. Upon this wooden base

some print is fastened of a size that corresponds to about fifty cm.; but any finer or coarser print may be used, if the case requires it, for which purpose two springs have been added.

This little contrivance is now held by the patient at the usual reading-distance, while the head and hand are kept in the same position. It is evident that in this situation there are *two* places on each line of the print from which the rays can enter only *one* eye, being intercepted for the other by the rod. But as one eye always can see what on account of the rod is not perceived by the other, there can be no gap in the line if both eyes are used at the same time. As soon, however, as one eye does not perform its function there is a black line across the printing matter, so that the words covered by it cannot be seen at all.

This little test may now be used for the following purposes:

To determine whether the patient employs both his eyes in the act of reading, or whether one deviates. If he uses only *one* eye the black line will appear; and if the other eye only deviates it will, on covering the first, read the print also distinctly, but the black line will appear in quite a different position as with the first eye.

To see whether both eyes, after having been made emmetropic for distance, have the same accommodation. For if this is not so, if there is a complete or partial cycloplegia in one eye, there will be certain words on each line that appear indistinct and blurred, though not entirely absent, as before, when one eye was not employed at all.

To detect a malingerer who claims to be blind in one eye. Of course, if he can read a whole line he is convicted.

To make physiologic experiments as to the question of simultaneous unequal accommodation of both eyes, and to study the difference in the retinal images of both eyes, and the heterophoriæ necessarily connected with anisometropia, especially in certain positions of the print.[1]

315 NORTH SIXTH STREET.

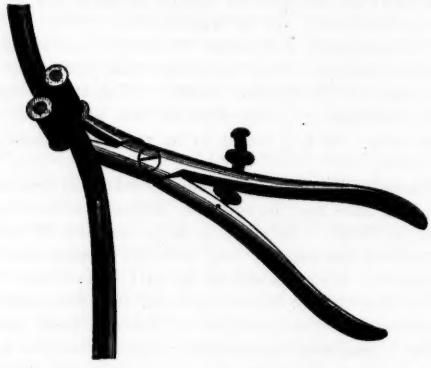
THE TUBE-STRIPPER.

BY A. L. BENEDICT, A.M., M.D.,
LECTURER ON DISEASES OF THE DIGESTIVE ORGANS, DENTAL DEPARTMENT, UNIVERSITY OF BUFFALO; CONSULTANT IN DIGESTIVE DISEASES, RIVERSIDE HOSPITAL, BUFFALO.

THE instrument to be described was devised in the spring of 1893. Its construction was suggested by the difficulty of removing the stomach-contents through the usual tube. Cases in which expression of the gastric contents is practicable by forcible pressure over the organ are rare, while an attempt to strip the tube with the fingers is tedious and, on account of friction, causes an annoying jerking. At the same time, it is evident that the ordinary aspirators and the rotary surgical pump might cause hemorrhage by too powerful suction.

The instrument consists of the levers of a heavy cutting-forceps. A roller, with flanges to prevent the slipping-off of the tube, is attached at an angle of 105° to each cross-piece of the forceps. The rollers are, of course, parallel, whether the levers are open or shut. An angle a little greater than 90° was chosen, so that the hand would not interfere with the tube as it passes between the rollers. By holding the handles together and running the rollers down the tube the air is forced out, while the elasticity of the rubber causes a vacuum into which the stomach-contents rush. At the same time the suction of an ordinary length of tube is not sufficient to damage the stomach-wall should it be drawn into the openings in the tube, unless some serious ulceration or vascular degeneration exists. In such cases the passage of the stomach-tube would, at any rate, be contra-indicated.

A threaded bar is fitted into one handle of the instrument and passes through an opening in the other handle. A nut with a milled margin is placed on this bar between



the handles, so that exactly the desired degree of compression can be exerted. A second nut outside the handle serves to lock the instrument, although this is seldom necessary.

The instrument has proved satisfactory as an adjunct to the stomach-tube. I have had but one opportunity to test its usefulness in other directions, namely, in a case of pleurisy with effusion. About a yard of rubber tubing was fitted into the end of a simple aspirating-needle, which was plunged into the chest with all aseptic precautions. The tube was stripped with the instrument, an assistant pinching the tube near the canula when it was necessary to reapply the rubber. About 400 c.c. of dark fluid were removed, when the patient began to cough and aspiration was discontinued. It was not necessary to tap again.

The cost of the tube-stripper is about $2.50, so that the entire cost of an aspirating outfit will be less than $5. While too feeble and slow in its action for many of the purposes for which a surgical pump is needed, this instrument has the advantage of compelling extreme caution, and, in many cases it will be found an efficient, simple, and cheap substitute for various expensive aspirators.

[1] This test is manufactured by Queen & Co., 1010 Chestnut Street, Philadelphia.

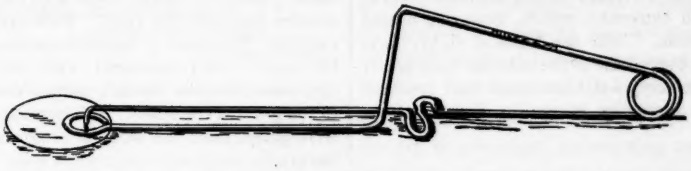
A NEW COVER-SLIP FORCEPS.

BY H. R. GAYLORD, M.D.,
RESIDENT PHYSICIAN IN THE PHILADELPHIA HOSPITAL.

IT has occurred to me that there is need of a simple and inexpensive cover-slip forceps. The least expensive forceps of this kind which is satisfactory is retailed at a cost of sixty-five cents, a price somewhat too high to

warrant their free distribution in laboratories, where they are likely to be mislaid or lost. It was the necessity of having to share a pair of cornet forceps with two other students which first suggested the forceps here presented. It is simply the development of the bent hair-pin which we have all used.

The forceps is made of nickel-wire, bent in the shape shown, and so constructed that the stain will not "run" on the forceps, and that when placed on a plane surface it stands upright, holding the cover-slip in a horizontal position.



It is admirably suited to "smear-work" of the clinical sort, and can be used even for section-work, although not so well adapted to this use.

The principal claim to be made for the device is the extreme low cost of its manufacture, which adapts it to laboratory-use. If purchased in quantity the expense would be trifling. At present it can be bought for about one-third the cost of the cornet forceps. Messrs. Queen & Co., of this city, have kindly undertaken the manufacture.

MEDICAL PROGRESS.

Hernia of the Bladder.—ROSE (*Lancet*, No. 3700, p. 194) has reported the case of a woman, twenty-four years old, who had been the subject of a hernial tumor for three years, and had been anemic for a number of years. The hernia was reducible, but a truss had been worn until three weeks before the woman came under observation, when the hernia became so painful that the pressure of the truss was unbearable. Nine months previously there had set in pain on micturition, and at times the woman had gone twenty-four and thirty-six hours without passing urine; she had an impression that at these times the swelling always increased in size. Micturition had become so painful at times that she had to support the rupture with the hand to secure relief. An ovoid swelling, about an inch long and half an inch wide, was present in the left inguinal region, with its long axis in the direction of the canal, and extended downward and forward toward the center of the left labium majus; there was a distinct though slight impulse on coughing, and at times the swelling became as large as a small hen's egg. When the patient had been gotten ready for operation and was anesthetized, and was placed in the recumbent posture on the table, all trace of the swelling disappeared. An oblique incision about three inches in length was made, with its center over the external abdominal ring, which was clearly defined, but no protrusion was found and no laxity of the abdominal wall felt. At this moment the patient fortunately vomited, and a small protrusion occurred through the external abdominal ring. This was drawn well down, and after clearing the fascia away it was incised. The wall was much thicker than was expected, and a few drops of a straw-colored fluid escaped, which proved to be urine, indicating that the cavity of the bladder had been entered. The wound was at once douched with a 1:40 carbolic lotion, and the vesical incision closed by a double row of fine catgut stitches, which included everything but the mucous membrane. During the necessary manipulations a second attack of vomiting caused the protrusion of a small swelling just external to the preceding one. On laying hold of this the peritoneal membrane gave way and a fine piece of omentum protruded. As this latter was somewhat extensive, it was ligated in successive portions and removed, the stump being returned into the abdomen. The peritoneal sac was now well drawn down, transfixed with catgut and tightly ligated and cut away, the upper part at once retracting within the abdomen. Three deep sutures were now passed through the parietal wound and the canal closed, whilst the external wound was sutured and dressed in the usual way, a drainage-tube being introduced. After the patient had been put to bed a rubber catheter was tied in the bladder and the urine permitted to run off. The first few ounces that passed were blood-stained, but subsequently the secretion came away quite clear, twenty-one ounces being voided in the first fifteen hours. There was no vomiting and the case progressed to convalescence without a hitch. The patient subsequently had one or two slight attacks of retention, although there was no return of the pain or discomfort previously complained of. The cicatrix in the groin became firm, and there was no return of the hernia.

Suture of a Divided Sciatic Nerve.—DALLAS-PRATT (*Dublin Journal of Medical Science*, September, 1894, p. 198) has reported the case of a poorly nourished lad, sixteen years old, who came under observation two hours after suffering an injury causing a wound of the right thigh seven or eight inches long close to the fold of the nates, at right angles to the long axis of the member and extending nearly from the middle line on the inside to within a short distance of the middle line on the outside. All of the structures at the back of the thigh were divided down to the femur, including the great sciatic nerve; the wound gaped to the extent of at least five inches. There was comparatively little pain and no hemorrhage. A quantity of machine-black, lubricant, and portions of clothing had been ground into the wound. The lad was at once anesthetized with ether and the wound cleansed with a 1 to 40 carbolic lotion. The ends of the divided nerve were found in a badly lacerated condition, so that it was necessary to remove nearly half an inch of each in order to secure a clean and solid surface to suture. Then it became necessary to stretch the ends until they came together without tension, when they were united by means of three sutures of fine carbolized silk introduced by means of a small needle; two were passed

through the sheath of the nerve on either side, and the third through the substance of the nerve at the center. In the case of all six sutures the distance of the punctures from the cut end was about a quarter of an inch. The muscles were sutured with silk and the skin brought together by means of hare-lip sutures. The surface was dusted with iodoform, a dressing of gauze was applied, and the thigh extended and the leg flexed as much as possible and fixed in that position on a splint. For a few days the patient had some pain, but the wound maintained a good appearance. The only complication was the formation of a number of trophic ulcers on the toes of the affected extremity, which, however, healed without much trouble. After the lapse of eighty days the patient had recovered use of the member sufficiently to be able to walk fairly well; sensation had returned in all parts of the extremity except the dorsum of the foot and toes.

Indications for Thoracentesis.—In an elaborate article, CAUSADE (*Gaz. des Hôp.*, 1894, No. 50; *Centralbl. f. innere Med.*, 1894, No. 34, p. 831) defines the indications for paracentesis thoracis as follows: The procedure is urgently demanded in cases of serous pleuritis, in which the amount of exudate reaches 1800 c.cm. Under these circumstances the upper border of percussion-dulness in the sitting posture is at about the level of the second intercostal space. No time is to be lost in making the puncture, as the presence of this quantity of fluid in the pleural cavity is attended with the danger of sudden death, even in the absence of dyspnea or other alarming symptom. In cases of serous pleuritis complicated by disease of the heart or by pericarditis, in cases of carcinomatous or tuberculous pleuritis, and in cases in which the dyspnea is pronounced, puncture is indicated as a palliative measure, even when the amount of the effusion is not large. The same indication exists in cases of pneumothorax. In the following conditions the indication for thoracentesis exist, though not urgent: (1) In cases of serous pleuritis of protracted course, with elevation of temperature and tardy or failure of diminution in the effusion; in such cases the course of the disease is shortened. (2) In cases of empyema in children, as well as in cases of empyema whose causative microörganisms are on examination found to possess a low degree of virulence; of particularly favorable prognosis are cases of empyema dependent exclusively upon the pneumoniacoccus. (3) It is an open question as to whether or not thoracentesis should be practised in cases of hydrothorax and pneumothorax; in some cases beneficial palliative results will be obtained, but no rigid indications can be laid down.

Chlorosis and Amenorrhea with Symptoms of Brain-disease.—THOMSON (*British Medical Journal*, No. 1742) has reported the case of a school-teacher, twenty-three years old, who first menstruated at the age of sixteen and a half years, and was regular until the age of twenty. From this time menstruation had been irregular and scanty, sometimes stopping for as long as three months. For nearly a year there had been general weakness, loss of appetite, headache, giddiness, attacks of vomiting and drowsiness. The headache came on especially after movement, sometimes keeping the patient in bed all day, and also at times preventing sleep at night. The headache was frequently accompanied by severe vomiting, which took place independently of meals and occurred most often in the mornings. Attacks of faintness and giddiness were exceedingly frequent, so that the patient had to seize hold of anything within reach to avoid falling; they came on in bed on turning from one side to another, and mostly ended in vomiting. Sleep was heavy and disturbed by dreams. On one occasion diplopia was present with more or less severity for about four weeks. The face, conjunctiva, and lips were extremely pallid. Objects viewed with the left eye appeared smaller than with the right. Both eyes presented optic neuritis. There was a hemorrhage near the disc in the left eye. Under treatment with iron, strychnin, and aperients there was constant improvement in vision and in the general condition. Subsequently iron and arsenic were given, and the woman progressed to perfect recovery.

A case of chlorosis and amenorrhea presenting symptoms of brain-disease is reported by BURTON-FANNING, and one of amenorrhea, presenting similar symptoms, by JOLLYE in the *British Medical Journal*, No. 1747, p. 1354.

THERAPEUTIC NOTES.

The Medicinal Treatment of Chronic Epilepsy.—As the result of an extended series of observations carried out at the Alabama Insane Hospital, BONDURANT (*American Journal of Insanity*, July, 1894, p. 23) arrives at the conclusion that borax, antipyrin, acetanilid, phenacetin, and many other alleged anti-epileptic agents are, save in rare instances, without influence over the course of chronic epilepsy associated with insanity. Beta-naphthol is occasionally beneficial, but probably not more so than catharsis. The bromids will postpone the occurrence of the convulsions, but will in most cases do more harm than good. In dealing with the maniacal attacks seclusion may be necessary. Sedatives should be employed very rarely, if at all. The best single remedy in the *status epilepticus* is bloodletting. Of drugs, the most valuable is chloral.

For the Lubrication of Catheters.—To facilitate the exploration of the urethra and bladder in his wards in the Necker Hospital, Professor GUYON (according to the Paris correspondent of the *Lancet*) is in the habit of using the following formula: Powdered soap, 4 drams; glycerin and water, of each, 2 drams; mercuric chlorid, 1 grain. This ointment is said not to be irritating to the urethra, and to be endowed with much greater lubricating powers than either oil or glycerin.

For the Night-sweats of Tuberculosis.—

℞.—Liq. potassii arsenitis, Tinct. belladonnæ } . āā ♏lxxij.
Aquæ laurocerasi . . . f ℥j.—M.

S.—Fifteen or twenty drops to be taken at about 5 P.M., and if necessary to be repeated at bedtime.—SKÉZELY, *Sem. Méd.*, 1894, 44; *Corr.-bl. f. Schw. Aerzt.*, 1894, 17.

THE MEDICAL NEWS.

A WEEKLY JOURNAL

OF MEDICAL SCIENCE.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment. When necessary to elucidate the text, illustrations will be provided without cost to the author.

Address the Editor: GEO. M. GOULD, M.D.,
1004 WALNUT STREET,
PHILADELPHIA.

Subscription Price, including Postage in North America.

PER ANNUM, IN ADVANCE . . . . . $4.00.

SINGLE COPIES . . . . . 10 CENTS.

Subscriptions may begin at any date. The safest mode of remittance is by bank check or postal money order, drawn to the order of the undersigned. When neither is accessible, remittances may be made, at the risk of the publishers, by forwarding in *registered* letters.

Address, LEA BROTHERS & CO.,
Nos. 706 & 708 SANSOM STREET,
PHILADELPHIA.

SATURDAY, SEPTEMBER 29, 1894.

A GRADUATE IN CRIME.

THE criminal annals of the State of Pennsylvania do not furnish, so far as we know, the record of a more significant event than the murder just committed at Lebanon by a released convict. It was the triumph of a legalized assassin; the crowning event in a career made possible only in a civilized State. It was a baccalaureate achievement wrought by the hands of a recent graduate in crime. It was done by one who had taken every course, save one, in our tribunals and our jails, and who will doubtless soon receive the final pass for his master's degree at the hangman's hand.

From authentic sources we learn that this convict, GARRETT, was discharged from the Eastern Penitentiary, in this city, on September 12, 1894, after serving a term of four years for a murderous assault on an aged man. On the same day he returned to his home in Lebanon, this State, and on the following morning he murdered his young wife by cutting her throat. He then escaped. He had made threats against his wife while still in the Penitentiary, because it seems she was making a laudable attempt to be divorced from him; and at this writing he is supposed to be still lurking about Lebanon, intending to kill a lawyer and two detectives, whom also he had threatened.

The career of this jail-bird is full of interest. When he was eighteen years of age he was convicted for larceny, and since that time, he being now only twenty-nine, has "figured *eight times* before the County Court, charged with offences ranging all the way from larceny to riot and attempted highway robbery." For his last offence—the assault upon an aged man—he was sent for the short term of four years to the Penitentiary, and thence, his inadequate term having expired and the authorities not having any alternative, he was discharged, to go at large once more and to rob and murder. Not thus would it have been if a rattlesnake or a mad dog had been set loose upon the street. So far as we know, no warning cry was given out when this monster was ejected from the portals of the penitentiary. No one ran ahead calling upon men and women to beware. The *posse comitatus* did not sally forth from Lebanon to annihilate him at the gates. The lawyer and the detectives were not scared. The wife sat peacefully and awaited her doom. Law slept, justice cowered, reason turned away her face, and science, as usual, was ignored. And why? Because this man was under the ægis of the law; in theory a reformed criminal, with the great seal of the Penitentiary on his diploma, with his sentence commuted for good behavior (save the mark!) and the crimes of his past life expiated on bread and water!

We conceive that this whole affair is atrocious beyond the power of pen to write, and disgraceful to civilization almost beyond credence.

As a counterpart of the case here discussed comes the report from England of the murder of a woman by her insane husband, who had been at different times in various insane hospitals and who suffered from homicidal delusions. In spite of the facts the man was released from time to time and permitted to procreate a family of eight children. The woman was delivered of a child about a week before death, but the husband would not allow her to receive medical attention. Besides, there was evidence that the man had severely beaten the woman. In this case the jury that held the inquest rendered a verdict of manslaughter.

The congenital criminal, we know, for science teaches, is beyond reclaim, but he is not beyond salvation. The law makes the fatal mistake of not recognizing him; science makes the equally fatal mistake of recognizing him in too technical a manner. It is unwisdom in the law to cling to an

exploded theory of crime and an antiquated procedure for "punishing" it; but it is useless for science to merely formulate that "atavism has hurled the congenital criminal back thousands of years and has placed him beside his pithecoid ancestor." We need something more enlightened than such law; something more universally intelligible than such science.

For, as we have said, the congenital criminal is not beyond salvation; but first of all he needs salvation from himself. He is not fit to be a social unit, nor even to be a unit unto himself. The State must step in and possess him. He is not to be "punished," but to be appropriated. The stigmata of degeneracy, of a fatal heredity, are upon him. If the law is not satisfied with the teaching of science, let the courts demonstrate the facts. Let them convict once, and then twice, and then thrice—and then, if it be not too late, let the State step in and settle the matter forever. We contend that an incorrigible criminal must be isolated for the term of his natural life, and that this is not only better for society, but is more humane for him.

Are our jails the universities of crime, and are our courts their preparatory schools? Was not BUZZARD, the Lancaster brigand, "converted" in the penitentiary, and then discharged to prey (not pray) at his leisure? He is now convicted again; lucky, perhaps, that he has not killed someone, and ready once more to receive grace and disgrace at Cherry Hill. He doubtless will be graduated again—and then let all who are concerned beware!

We do not raise here the question of insanity, although it is inextricably interwoven with this subject of inveterate criminality. This malefactor GARRETT, we are credibly informed, was not believed to be insane while in prison; in fact, he had reason to suspect his wife's fidelity. Neither do we reflect upon the officials at the Penitentiary, who have no authority to detain a convict whose sentence has expired. But we condemn without measure a system of criminal jurisprudence which is responsible for such a crime.

EDITORIAL COMMENTS.

The Anti-Opiate Society of America is the name of an association formed in New York City for the laudable purpose of using such means as may from time to time be considered best to prevent the unnatural use and the abuse of such drugs as opium and its derivatives, cocain, chloral, and other drugs whose use is both pernicious and injurious.

The means now being used by the Society to attain this end are as follows: 1, the calling of public attention to the enormity of the evil; 2, the free dissemination of leaflets, pamphlets, books, and other literature bearing on the subject; 3, agitation of the matter in the press of the country; 4, efforts to secure legislative enactments regarding the sale of the drugs and preventing indiscriminate traffic therein; 5, also the enforcement of such laws when made.

Some States possess laws prescribing the manner in which opiates may be sold and used, but very few of these laws are enforced.

According to reliable statistics there are at present in the United States 1,500,000 men and women who habitually use opium in some of its forms, while twenty years ago there were less than 300,000 opium-users in the same territory. It is said that in the city of Chicago 25,000 persons are addicted to the habit, in New York City over 50,000, and in St. Louis about 20,000. The amount of money expended in this connection will reach millions of dollars.

It is the object of the Anti-Opiate Society to reach especially such persons as are unfamiliar with the powers and dangers of narcotic drugs, and among other things to point out that the morbid craving is in many cases the result of the use of patent medicines, soothing syrups, and cough-mixtures, most or all of which contain opium.

The Society earnestly solicits the active coöperation, in word and deed, of all who desire to aid in its objects. It is the first of its kind, and deserves the warmest encouragement and support. It is maintained entirely by voluntary contributions. W. TEN EYCK HARDENBROOK, No. 128 West Sixty-seventh street, New York City, is the Secretary.

The Iron Process of Water-Purification.—In view of the agitation in favor of the filtration of public water-supplies, it is opportune to call attention to a method that is both interesting and efficient. Experiment indicates that iron and its oxids have much influence in the destruction of organic matter, living and dead. Some iron oxids make excellent filtering material. Spongy iron produced by heating certain ores in reducing gases has long been known to be an efficient agent for removing microbes and dissolved organic matter from water, but it fails completely in time. It was an ingenious suggestion of an English chemist some years ago that the function of the iron might be restored by constantly agitating it so as to maintain a fresh surface. Experiments finally led to the invention of a simple, efficient, and economical method of purifying water. Scrap-iron in the form of turnings or punchings are placed in an iron cylinder which slowly rotates on a horizontal axis, while the water passes through in a steady stream. The iron is converted into ferrous carbonate, which on exposure to the air (in a trough through which the water flows upon its escape from the cylinder) is converted into ferric oxid, to which both dead organic matter and living microbes adhere. On filtering the turbid water through sand, a clear and wholesome filtrate is obtained. The presence of the iron oxid enables more rapid filtration to be carried out and involves less filter-cleaning. The iron would quickly become inert if allowed to lie in the water, but the constant rolling keeps the surface clean and active.

This process is now in successful operation at Antwerp, where the original water is of very bad quality, and at Paris, operating on Seine-water. A successful experimental plant was also operated on Schuylkill-water some years ago.

Air-borne Infection.—The *Provincial Medical Journal* discusses at some length the possibility of infection of meat through the practice of carrying it through the streets uncovered. It admits, of course, that cooking must get rid of almost, if not all, the microbes that may lodge thereon, but the question of infection carried through the air is one of much wider scope than the lodgment of microbes on a few articles of food. In cities the streets are almost entirely paved with non-absorbent materials, and unless such surfaces are flushed frequently and thoroughly, and in the intervals of flushing constant cleaning is maintained, much dust will be produced. It is generally admitted that tuberculosis is frequently, perhaps principally, transmitted by the inhalation of the fine powder into which is ground sputum indiscriminately ejected in public places, and modern investigation has shown that the most virulent microbes are found in the discharges from the intestines, and the fact that our common domestic animals, especially the horse, discharge their excreta freely on our streets, must render the dust of cities dangerous. It may some day be shown that this dust is a distributer of various skin-affections and some of the contagious febrile diseases. Exact investigations by several competent observers have shown that sewer-gas is not a carrier of germs, and that there is little reason to ascribe to it a direct causation of disease; but we doubtless much underrate the dangers that lurk in the pulverized filth that is raised in clouds on our streets.

Are Negroes and Brunets Peculiarly Subject to Electric Retinitis?—Dr. James P. Parker, of St. Louis, Mo., in a private letter writes that he has had a number of cases—thirteen up to the present time—of electric retinitis in negroes or dark-skinned persons, and he believes that this affection will not be found in those of blond type. He finds that the incandescent light has a peculiar effect upon the negro and the brunet, and that when such people suffering from this effect come to the physician, the latter fails to recognize the retinal injury on account of the very evident conjunctivitis. The changes in the retina consist in an increased pigmentation of the central or macular region, together with lessened visual acuity, hyperemia, etc., and occur, not immediately after the patient complains of conjunctival and other symptoms, but follow only about ten days after this time. Dr. Parker thinks that the impairment of vision will be permanent in all these cases. The greater the natural pigmentation of the retina the more disastrous the result. We make mention of this observation here in order that others may be on the lookout for similar cases and that the truth may be ascertained by a number of different clinicians.

First Care of the Newborn.—Dr. Th. S. Egge, of Moorehead, Minn., informs us that while travelling in Norway a few years ago, at a time when the nights were cold and foggy and the landscape was covered with a heavy frost, the stones and banks of the numerous creeks and brooks presenting a coating of ice, he found a gypsy woman bathing in a pond her child born but three hours previously. On being remonstrated with, the woman explained that it was the custom among the parturient women of the community of which she formed a part to wash their newborn for the first time in cold, running spring water, with the idea of training the children from infancy to withstand the buffets of a cold and unsympathizing world. The contention was that if the child should die as the result of this early exposure it was just as well, as it would otherwise die early at any rate. The practice is said to be common among the Laps and Finns.

CORRESPONDENCE.

THE MARRIAGE OF SYPHILITICS.

To the Editor of The Medical News,

Sir: For the purpose of securing reliable statistics on the subject of the marriage of syphilitics I desire to enlist the assistance of those of your readers who have had experience that will be of value in determining the period when this disease ceases to be communicable and inheritable. I shall, therefore, esteem it a great favor on the part of any physician who will send me answers to the following questions. Due credit will be given in a future publication to those who aid me in this work.

1. What is the latest period from the date of the initial lesion that you have known the disease to be communicated by a patient who has been from the first under your observation?

2. What is the latest period from the date of the initial lesion that you have known (*a*) a syphilitic man or (*b*) a syphilitic woman become the parent of a syphilitic child?

3. Have you ever known syphilis to be either communicated or handed down, at a later period than four years from the date of the initial lesion, by an individual who has been constantly under your observation during that time?

In answering these questions I should like a brief but complete history of each case and an account of the treatment that has been pursued.

I hope by this means to obtain the experience of a large number of observers and to reach a fairly reliable conclusion as to the time when we may safely permit our syphilitic patients to marry.

Yours, very truly,

Burnside Foster.

St. Paul, Minn.

NEWS ITEMS.

The Collection and Preservation of Anatomic Material.—At the last meeting of the Association of American Anatomists, J. Ewing Mears, Thomas Dwight, and Joseph D. Bryant were appointed a committee to "consider the question of the collection and preservation of anatomical material, and to report at the next meeting what in their opinion are the best means of accomplishing these objects."

In order to make the work of the committee as comprehensive as possible, and to obtain information which will be of service in arriving at definite conclusions as to the best methods of accomplishing the purposes indicated in the resolution, the committee has deemed it desirable to send to the teachers of anatomy, not only in

this country, but abroad, this circular-letter, with the questions appended, and respectfully to request answers thereto, as fully as they can be made.

1. Is anatomical material obtained in accordance with a legal enactment, wholly or in part?

2. If there is an anatomical law in your country or State, please send a copy of it to the chairman of this committee, Dr. J. Ewing Mears, 1429 Walnut street, Philadelphia, Pa. Please state whether the law is satisfactory, whether it is readily obeyed by those upon whom duties are imposed by it, and mention any improvements you would suggest as to its requirements.

3. Is the material received in good condition?

4. What disposal is ultimately made of the remains?

5. Please state what means are employed to preserve anatomical material for the purposes of dissection or operative surgery. If injections of preservative fluids are used, state their composition and the methods of use, at what point injections are made, whether at the heart or in the larger arteries, and their effect in accomplishing the preservation, with any changes in the color or character of the tissues. What length of time can material be used in dissection by the methods employed by you? If preservation by means of "cold storage" is employed, please state the cost of the machinery which it was necessary to construct for this purpose, and what means are taken to prevent decomposition after the subject is placed upon the table for dissection.

6. Please state the cost, by the method employed by you, for each subject, (*a*) for receiving it, (*b*) for injecting and preserving it.

7. Do you obtain an adequate supply of material for the purposes of anatomical instruction? How many students are assigned to each subject, and what is the method of allotment?

8. Please give any information which you may deem of importance. As the report will be general in character the name of the informant or institution will not be mentioned by the committee unless requested.

Your compliance with the request of the committee *at an early date* will be fully appreciated as rendering assistance to it in accomplishing its work, and it desires to thank you for the same in advance.

Meetings of Philadelphia Medical Societies:

	Meets.	Next meeting.
Academy of Surgery,	1st Monday of month, Oct.—June.	Oct. 1
College of Physicians,	1st Wednesday of month, Sept.—June.	Oct. 3
Section of Ophthalmology,	3d Tuesday of month, Sept.—May.	Oct. 16
Section of Orthopedic Surgery,	3d Friday of month, Oct.—April.	Oct. 19
Section of Otology,	1st Tuesday of month, Oct.—May,	Oct. 2
Section of Surgery,	2d Friday of month, Oct.—May.	Oct. 12
County Medical Society,	2d and 4th Wednesdays of month, Sept.—June.	Oct. 10
Neurological Society,	4th Monday of month, Oct.—April.	Oct. 23
Obstetrical Society,	1st Thursday of month, Sept.—June.	Oct. 4
Pathological Society,	2d and 4th Thursdays of month, Sept.—June.	Oct. 11

Meetings of State and National Medical Societies:

	Meets.	Next meeting.
American Academy of Medicine.	May, 1895	Baltimore.
American Association of Genito-urinary Surgeons.	May 28–31, 1895	Washington, D. C.
American Medical Association.	May, 1895	Baltimore.
Association of Military Surgeons of the United States.	May, 1895	Buffalo, N. Y.
British Medical Association.	July 30–Aug. 2, 1895	London, England.
Illinois State Medical Society.	May 21, 1895	Springfield, Ill.
International Congress of Dermatology.	July 31–Aug. 4, 1895	London, Eng.
International Medical Congress.	August, 1896	Moscow, Russia.
Medical Association of the State of Alabama.	April 16–19, 1895	Mobile, Ala.
Medical Society of the State of California.	April 16, 1895	San Francisco, Cal.
Medical Association of Georgia.	April 17, 1895	Savannah, Ga.
Medical Society of the State of New Jersey.	June 25, 26, 1895	Cape May, N. J.
Medical Society of the State of New York	Feb. 5, 1895	Albany, N. Y.
Medical Society of the State of Pennsylvania.	May 21, 1895	Chambersburg, Pa.
Medical Society of the State of Tennessee.	April 9, 1895	Nashville, Tenn.
Medical Society of Virginia.	October 23	Richmond, Va.
Medico-Legal Society.	Dec. 12	New York.
Mississippi Valley Medical Association.	Nov. 20–23	Hot Springs, Ark.
New Hampshire Medical Society.	May 30, 31, 1895	Concord, N.H.
New York State Medical Association.	October 9–11	New York City
Ohio State Medical Society.	May 15, 1895	Columbus, O.
Southern Surgical and Gynecological Association.	Nov. 13–15, 1894	Charleston, S. C.
Texas State Medical Society.	April 23, 1895	Dallas, Tex.
Tri-State Medical Society.	October 9–11	Atlanta, Ga.
Tri-State Medical Society.	October 2, 3	Jacksonville, Ill.
Vermont State Medical Society.	October 11, 12	Montpelier, Vt.

Dr. Theophilus Patterson died September 12, at Salem, N. J., after having been engaged in the practice of medicine for nearly forty-six years.

BOOKS AND PAMPHLETS RECEIVED.

U. S. Department of Agriculture. Report of the Microscopist for 1892. By Thomas Taylor, M.D. From the Report of the Secretary of Agriculture for 1892.

U. S. Department of Agriculture. Division of Microscopy. Food-Products. II. Eight Edible and Twelve Poisonous Mushrooms of the United States, with Directions for the Culture and Culinary Preparation of the Edible Species. By Thomas Taylor, M.D. Reprinted from the Report of the Secretary of Agriculture for 1890.

U. S. Department of Agriculture. Division of Microscopy. Food-Products. III. 1. Improved Methods of Distinguishing between Pure and Fictitious Lard. 2. Four Edible Mushrooms of the United States. By Thomas Taylor, M.D. Reprinted with Revision from the Report of the Secretary of Agriculture for 1891.

Temperature in Uremia. By Donnel E. Hughes, M.D. Reprinted from the Philadelphia Hospital Reports for 1892.

The Aseptic Dressing of the Umbilical Stump. By Joseph Eve Allen, M.D. Reprinted from the American Journal of Obstetrics, 1894.

A Modern Wizard. By Rodrigues Ottolengui. New York and London: G. P. Putnam's Sons, 1894.